SOUTHWESTERN MEDICINE

OFFICIAL ORGAN OF
ARIZONA STATE MEDICAL ASSOCIATION
EL PASO COUNTY (TEXAS) MEDICAL SOCIETY
NEW MEXICO MEDICAL SOCIETY
THE SOUTHWESTERN MEDICAL ASSOCIATION

VOL. XXIV EL PASO, TEXAS, MARCH, 1940 No. 3

Pneumonia

(A Symposium)

L. R. KOBER, M. D.,
S. R. CANIGLIA, M. D.
and
KENT THAYER, M. D.
Phoenix, Arizona

I—STATISTICAL SURVEY FOR 1939 - ST. JOSEPH'S HOSPITAL

FOR the past three years it has been my privilege to give a statistical survey on pneumonia in the charts of St. Joseph's Hospital. My attention was drawn toward this subject by an editorial which appeared in the J. A. M. A. in 1937,[1] in which it was stated that the highest annual pneumonia death rates were occuring in the southwestern and northwestern parts of this country.

Many of our physicians did not believe this, and some even told me that we seldom saw a true case of pneumonia, meaning, of course, the usual lobar pneumonia. At that time the Neufeld method of rapid determination of specific pneumococcus type was rapidly becoming the means of determining whether a specific anti-pneumococcic serum could be used or whether the older symptomatic types of treatment would have to be used. It was about this time that experiments were being done in numerous clinical centers with the higher types of rabbit sera and many types of anti-pneumococcic sera were not yet generally available at that time.

The statistics for St. Joseph's Hospital for the years 1936 and 1937 showed a total of 590 cases of pneumonia during those two years, with more than half (385 cases) diagnosed atypical or broncho-pneumonia, and a mortality in this group of slightly over 37% (144 deaths). During these two years there were 205 cases of lobar pneumonia with a mortality slightly over 30% (62 deaths). There was no attempt made at selection of cases. Some of these were terminal or secondary to some other serious ailment. But these figures did give us the information that was necessary to convince us that we do have pneumonia in this sunny climate and that many of these cases do not get well.

Since our attention was directed at that time to the treatment of pneumonia with specific anti-pneumococcic sera, a check-up revealed that only 21 cases during the two-year period (1936 and 1937) had received the benefit of serum treatment. A concerted effort was made by the hospital and its staff to develop methods of providing serum treatment earlier and more frequently in the cases where it was indicated and available, so that during the year 1938 twice as many cases (48) received serum as had in the two pervious years combined. Also during 1938 many cases of pneumonia, particularly the atypical one for which no specific type could be determined or for which no specific anti-pneumococcic serum was available, were given sulfanilamide or neo-prontosil. As a result, the gross mortality for 1938 fell to 27.8%, as compared to 34.9% for the previous two-year period. Separating the lobar pneumonias, which were usually more amenable to specific treatment, we found that the mortality rate had been cut to 17% for 1938, as compared to 30% for 1936 and 1937. It is only fair to say that possibly some of this reduction was due to the fact that during 1938, with the co-operation of the hospital management, more laboratory and x-ray examinations were made and more attention to exact diagnosis was thereby attained. Likewise, it must be noted that no attempt was made to eliminate terminal or secondary pneumonias.

During the study of the statistics for 1938 it was also noted that many of the childhood pneumonias were associated with diarrhea, the so-called "summer diarrhea" with dehydration, broncho-pneumonia, and death, and that the highest mortality occured in county patients, where the fewest number of patients received specific treatment.

The pneumonia statistics for 1939 open an entirely new chapter in the treatment of this disease, for sulfapyridine has practically replaced all other therapy. Anti-pneumococcic sera is occasionally used, but chiefly for very desperate cases in combination with sulfapyridine. One should not be too optimistic about the results of a new drug by its success in one season, especially in a disease such as pneumonia, where it is known that the severity of the disease and the virulence of the organisms frequently vary from year to year. However, for one who has closely followed the mor-

Read before Staff Meeting at St. Joseph's Hospital. Phoenix, Arizona, January 8, 1940.

1. Journal of the American Medical Association 109:1910, (Dec. 4, 1937).

tality record for pneumonia in this hospital for a number of years, the year 1939 stands out as one of exceptional progress and leads one to hope that before long pneumonia will have dropped from first place amongst infectious disease mortality to a place where death from pneumonia is no longer a vital factor in mortality statistics.

Here is the record for the year 1939 in St. Joseph's Hospital:

Total number of pneumonias of all types, 322 cases, with a gross mortality of 65 deaths, or 20%, compared to 37% for 1936-37 and 30% for 1938, a reduction of 10% over last year. Of these 322 cases, 102 were classed as lobar and 220 as atypical cases, with only 6 deaths (6% mortality) in the lobar cases and 59 deaths (27%) in the atypical classification. Compare this rate of 6% with the 30% in 1936-37 and 17% in 1938 for lobar pneumonia, and compare the 27% rate with the 37% for 1936-37 and the 32% in 1938 for atypical pneumonia cases. However, if we remove the 75 cases of pneumonia with 42 deaths which were secondary or terminal to some other disease and really are not to be charged against pneumonia, we have only 145 atypical (broncho) pneumonias with 17 deaths, or a mortality rate of 11.7%. Likewise eliminating these 75 secondary cases with 42 deaths from the total number of pneumonias, we have actually 247 primary cases of pneumonia treated in St. Joseph's Hospital during 1939 with 23 deaths, or 9.3% mortality. Certainly a big improvement over any previous years.

Using the unselected cases (that is, leaving in the secondary and terminal pneumonias), the statistics according to type of treatment are as follows: Those in which only symptomatic treatment was used—89 cases with 39 deaths, or mortality of 43.8%. This group, of course, contains most of the terminal cases secondary to some other pathology; 150 cases were treated with sulfapyridine, with 15 deaths (10% mortality); 21 cases with specific anti-pneumococcic serum, with 3 deaths (14% mortality); 55 cases were treated with sulfanilamide or neo-prontosil, with 9 deaths (16%); 4 cases were treated with saulfapyridine and specific serum, and 3 cases with sulfanilamide and serum, amongst which cases there were no deaths.

The mortality by ages is as follows: Infants and children to 16 years of age, 168 cases, with 31 deaths, or a mortality of 18.4%. Adults 16 to 49 years of age, 91 cases, with 12 deaths, or 13% mortality. Persons 50 years or over, 58 cases, with 20 deaths, or 34.5% mortality. Three charts did not state the age and one death occurred amongst these three.

The mortality according to economic status is as follows: County cases, 108, with 29 deaths (26.8% mortality); Agricultural Health and Medical Association, 51 cases, with 10 deaths (20%), and private patients, 163 cases, with 26 deaths, or 16% mortality.

Of the 93 cases which gave reactions to a specific type anti-pneumococcic serum, 19 were Type I, 12 Type III, 11 Type V, 8 Type VII, 5 each of Types II, VI and XVIII, 4 Type XIV, 3 Type VIII, 2 each of Types IV, IX, X, XI, XII and XIX, and one each of Types XV, XVI, XX, XXI, XXII, XXIII, XVII, XXIX and XXXII.

Out of the 322 cases, 128 had x-rays made, and 28 autopsies were obtained from the 65 deaths. Before I close, I want to point out the importance of doing an autopsy on every hospital fatality. In several of the cases included in this report no clinical finding of pneumonia had been recorded although in a few it was undoubtedly the cause of death. Likewise, since it has been found that most cases of infantile diarrhea die of pneumonia, the mortality rate in these children has been remarkably reduced this year through the use of sulfapyridine. If it had not been for post-mortem examinations, many of these cases would still be receiving treatment for diarrhea and dying with pneumonia.

I believe it was Joslin who said that "any physician who knows that his method of treatment will be checked up by an autopsy will unwittingly take more pains with his patient. It is human nature to do better work when one is under supervision, if only his own supervision. Doctors make mistakes, but in general the doctors who have the most autopsies are the ones who err the least. It is insurance for the best sort of treatment during life to stipulate that after death an autopsy shall be performed."

SUMMARY

The statistics on pneumonia in St. Joseph's Hospital over a 4-year period show the remarkable progress which has been made in the treatment of this disease. Chart I shows that from a gross mortality of 35% in 1936-37 the rate was cut to 28% with the wider use of anti-pneumococcic sera in 1938, and to 20% in 1939 with the coming of sulfapyridine.

Chart I

PNEUMONIA IN ST. JOSEPH'S HOSPITAL

Year	Total	Deaths	LOBAR		ATYPICAL	
			Cases	Deaths	Cases	Deaths
1936-37	590	208 (35%)	205	62 (30%)	385	144 (37%)
1938	353	98 (28%)	106	18 (17%)	247	80 (32%)
1939	322	65 (20%)	102	6 (6%)	220	59 (27%)

NOTE: These are unselected cases, and include all cases of pneumonia whether secondary to some other ailment or a terminal event in the course of some other pathological condition.

Chart II

PNEUMONIA IN ST. JOSEPH'S HOSPITAL—1939

Of 322 cases, 75 were not primarily pneumonia
Out of these 75 cases, 42 died (56%)

Primary pneumonia cases	247
Primary pneumonia deaths	23
Primary pneumonia mortality	9%
Lobar pneumonia cases	102
Lobar pneumonia deaths	6
Lobar pneumonia mortality	6%
Atypical primary pneumonia cases	145
Atypical primary pneumonia deaths	17
Atypical primary pneumonia mortality	12%

Chart II shows the mortality for the 247 primary pneumonias during 1939 in this hospital is surprisingly low, 6% for lobar and 12% for atypical or broncho-pneumonias, or a rate of 9% for pri-

mary pneumonias, during the year of 1939. This is not the work of one or two internists, but 60 members of the staff of this hospital have made these records possible.

II—SULFAPYRIDINE

In the May, 1938, issue of the *Lancet*, Lionel Whitby reported some experiments on a new compound which he called M & B 693. He reported this compound as a chemotherapeutically active agent in pneumococcal infections, especially against Types I, II, III, V, VII and VIII. This compound, later named sulfapyridine in this country and put on the market just last April, has been without question one of the greatest contributions to the chemotherapy field of medicine.

Insofar as is known, the essential value of the drug lies in its ability to inhibit the growth of the pneumococcus, irrespective of type. Ultimate recovery, however, depends on the patient's ability to develop specific antibodies which neutralize the micro-organism's free carbohydrate substance.

Before beginning sulfapyridine therapy, several diagnostic tests should be made, namely:

1. Typing of sputum to determine infecting organism.
2. Taking of blood culture, because later cultures are unreliable because of the bacteriostatic effect of the drug.
3. Taking complete red and white blood cell counts, hemaglobin determination, differential white cell count and urinalysis.

Sulfapyridine should be started immediately; you need not wait for the results of the typing and blood cultures to come back.

The exact dosage of the drug is not known nor is it definitely known how soon treatment may be safely discontinued; however, it is very important that the drug be administered as early as possible in the disease; that relatively large amounts be given within the shortest possible period of time, and that a satisfactory maintenance dose be continued.

The most effective way of controlling dosage requirements is to make a daily blood estimation for the presence of the drug in the free and conjugated form. Blood concentrations ranging between 3 and 6 mgms. per cent of free drug are usually considered adequate. The conjugated drug is inactive. Where blood level determinations cannot be made, the clinical response will necessarily have to serve as a guide for dosage required.

Various dosage scales have been recommended by different men. They all vary but very little from one another. Plummer and Ensworth of Bellevue and New York Hospital have a routine of giving 2 gms. as an initial dose, followed by 1 gm. every 4 hours until 16 gms. have been given. If clinical response is not satisfactory, a continued dose of 0.5 gms. is given until definite improvement is noted. Finland and Maxwell of Boston give 2 gms. of sulfapyridine as an initial dosage until the temperature, pulse rate and respirations have been essentially normal for a period of 48 hours. Flippin and Lockwood of Philadelphia followed the scheme outlined by Evand and Gaisford of England by giving 2 gms., then 1 gm. every 4 hours until a total of 25 gms. have been given. The mortality and morbidity rate was practically the same in all three studies.

For children, Barnett of St. Louis recommends 0.15 gms. every 4 hours for children between 1 and 6 months; 0.3 gms. every 4 hours between 6 months and 1 year; 0.3 gms. every 3 hours between 1 and 2 years; 0.6 gms. every 4 hours for children between 3 and 5 years; and 0.9 gms. every 4 hours for those up to 12 years of age. The initial dose should be at least twice and sometimes three times the amount of the 4-hour dose; of course, depending on the child's condition.

Chas. Smith and Rosa Lee Nemir of New York City followed a routine of giving 0.2 gms. sulfapyridine per kilogram of body weight on the first day, and half this amount on subsequent days. No child was given more than 4.5 gms. a day, and the average total amount given to a child was 5.48 gms. The average total dosage for an infant under 2 years was 3.99 gms.

The toxic manifestations of sulfapyridine therapy are similar to those which are associated with sulfanilamide therapy. Nausea and vomiting are the most frequent toxic reactions encountered. Nausea occurs in about two-thirds of the cases and vomiting in about one-third; 10-15% of patients have such severe vomiting reaction that it intereferes with effective oral administration of the drug. Giving the drug in powder form, suspended in milk, apple sauce or fruit juices, may help this vomiting. Barnett gives a 2% solution by rectum with gratifying results. This suspended form of the powder drug works wonderfully well, if the toxic reaction is of local origin, as most men believe, but Plummer and Ensworth of New York claim that it is definitely central in origin. They state that it rarely occurs until 4-6 gms. of the drug have been given, and that it has been shown that giving sodium sulfapyridine by vein causes vomiting; therefore, they have found no satisfactory way of controlling this vomiting short of decreasing the drug dosage and allowing the blood level to fall. (Marshall and Long of Baltimore, I. V. in 30 cases, vomiting during or after administer in almost all cases.)

Hemolytic anemia and a neutropenia may develop which may be severe enough to classify as agranulocytosis. Immediate discontinuance of the drug, followed by blood transfusions usually have resulted in prompt recovery.

Cyanosis has also been attributed to the use of this drug, but in lobar pneumonia it is very difficult to say the cyanosis is due to the drug or is the result of the disease itself. Accepting the theory that the drug does cause a cyanosis, it has not yet been definitely proven that the cyanosis is due to the formation of a sulfhemaglobin as in the case with sulfanilamide, but until so proven,

one way or the other, it is suggested that saline laxatives and sulphur-containing foods be avoided during the administration of sulfapyridine.

Intereference with kidney function has also been reported. Hematuria, in some instances associated with anuria, nitrogen retention and nephritic edema, have been observed. This is presumably associated with the insolubility of the acetylated form of drug. Administration of adequate amounts of fluid and discontinuation of the drug usually results in rapid recovery. Small crystalline stones have been recovered in experimental animals and in human cases from the pelvis of the kidney, from the ureter and also from the bladder.

Other forms of reaction occasionally encountered are: skin rash, vertigo, headache, general malaise, and mental depression.

Other pneumococcal infections treated with sulfapyridine include pneumococcic meningitis, pneumococcic peritonitis, otitis media and mastoiditis, and pneumococcic endocarditis. As a rule, these cases require the use of specific serum together with the sulfapyridine before favorable results can be obtained.

Pneumococcic meningitis: sulfapyridine immediately, then specific serum intravenously, transfusions, blood serum intrathecally.

Pneumococcic peritonitis: sulfapyridine immediately, then specific serum intravenously, no surgery.

Pneumococcic otitis media: begin sulfapyridine therapy to prevent mastoiditis.

Pneumococcic endocarditis: serum and sulapyridine; feel fine while under treatment, although blood continues to be invaded; no cure once condition is established.

CONCLUSION

The following conditions usually require the combined treatment of the two therapies, the specific serum and sulfapyridine:

1. If the patient is over 40 years old: M. R. 20-35% during first 2 years of life; M. R. 10% under 20 years; then increase 10% with each decade of life. (40% and ones after 40 years.)

2. If bacteremia is present: Need specific serum (anti-bodies) *now*.

3. If treatment is begun after 3 days of illness, bacteremia usually occurs around the fourth day.

4. If there is involvement of two or more lobes: M. R. of 8.5% for one lobe; M. R. of 24.5% for two lobes; M. R. of 40.7% for three lobes; M. R. of 68.2% for four lobes; 11 cases with all five lobes involved, 100% M. R. (Cohen and Lewis.)

5. If pneumonia is Type III: This type has highest M. R. (50%); has highest percentage of positive cultures (96.1%).

6. Complications, such as pregnancy, focal infections and cardiovascular disease: 150 cases treated with sulfapyridine, 15 deaths, M. R. 10%; 4 cases treated with serum and sulfapyridine, no deaths.

III—EARLY DIAGNOSIS

An effort has been made to determine a method of diagnosing pneumonia by laboratory methods early, before the patient has all the signs and symptoms of an out and out pneumonia, and to eliminate some of those cases diagnosed as pneumonia that are not true pneumonia.

In looking over the charts, we have found in the past year that some of the cases certainly do not follow a typical pneumonia course, nor was the laboratory work consistent with the majority of the true pneumonia cases that were in this hospital. We do know that even though a patient has a specific type of pneumococcus in his sputum he does not necessarily have to have pneumonia. Some of these cases, although I cannot say they did *not* have pneumonia, certainly were not typical.

Finland, Spring, Lowell and Brown, in the May issue of *Annals of Internal Medicine*, state the following: "Certain types, notably Types I, II and V in adults and Type XIV, I and V in infants and children have been found to quite consistently bear etiologic relation to acute pulmonary infection. Other types, such as III, VII and VIII in adults and VI and XIX in infants, while etiologically related to many cases of acute pneumonia, have also been found frequently to be normal inhabitants of the nasal pharynx without relation to acute disease. Still others, as Types X and XX and types beyond XX, can usually be considered as part of the normal pharyngeal flora, and only rarely give rise to acute pneumonia."

We do know that x-ray gives us proof when we are unable to determine definitely whether a patient has or hasn't true pneumonia. In this hospital in the past year, out of a total of 92 cases of lobar pneumonia, 43 had x-rays. Out of a total of 205 diagnosed broncho-pneumonia or atypical pneumonias, 76 had x-rays. However, x-rays are an added expense to the patient. As far as treatment is concerned, we very frequently consider the patient as having pneumonia, at least since sulfapyridine has come in, even if it is only a severe acute bronchitis; and he recovers promptly, so the end-result to the patient as far as diagnosis is concerned may not be an important factor. But when acute bronchitis is diagnosed as pneumonia, our pneumonia rate per year is markedly increased, and incorrect.

An effort has been made to try to evaluate the accuracy of the white count and non-filament count. A large majority of the pneumonias in this hospital in the past year has white counts varying between 15,000 and 65,000, with a high percentage of polymorphonuclear cells, and non-filament count as high as 60%. We know that probably the patient with a count like this has more than acute bronchitis, and in many of these cases x-rays show a rather wide distribution of pneumonia. Whether we can rely on this white count to dif-

ferentiate bronchitis from pneumonia is questionable. I have gone through some of the histories and picked out some with low white count, and have tried to evaluate the clinical course with the white count.

Case 47262. Age 21. This patient had had a cold for two weeks. The night he was admitted to the hospital he developed pain in his left chest. His temperature went up. He had some cough. His chest showed very few scattered rales in the right lower lobe. His temperature on admission was 102. This dropped to normal in 3 hours and remained normal. Sputum showed no pneumococci. White count was 13,000, with 77% polymorphonuclear cells. There is a question of whether we could call this true pneumonia. (Show x-rays.)

Case 47295. Age 50. This patient had had a cold for about one month. Three days before admission he developed a chill and cough, and pain in the upper part of his chest. Physical examination showed loud coarse rales throughout his chest, but loudest in the right apex. On admission his temperature was 99.6. In 4 hours it was normal and remained so. Sputum showed tubercle bacilli, and pneumococci Type VI. This patient's white count was 12,800, with 89% polymorphonuclear cells. No x-ray was taken. It is questionable whether this patient had true pneumonia. Possibly these pneumococci, Type VI, were not the causitive organism. However, this patient was given sulfapyridine after admission, and we cannot say positively what would have developed.

Case 46633. Age 2 weeks. This was an Agricultural patient of mine. The baby had had a cold for two days. About 12 hours before admission it had developed dyspnoea and cyanosis. Physical examination revealed rales throughout both lungs. Throat culture showed pneumococci, but no type was determined. This child's temperature remained close to 101 rectal for 24 hours; then came down to normal, where it remained. No specific treatment was given. White count was 16,050, with only 44% polymorphonuclear cells. I believe I was wrong when I made a final diagnosis of bronch-pneumonia on this baby. If it had really had pneumonia it would not have recovered as rapidly as it did. I think this child had acute bronchitis.

Case 46764. Age 31. This was a patient of mine. Diagnosis of mild broncho-pneumonia was made. This patient had a chill 3 days before admission. On the night of admission her temperature had gone up. She had developed pain in her left chest. There had been no bloody sputum. Physical examination showed numerous rales in the left base. Her temperature on admission was 102. It dropped to normal in 8 hours and varied between normal and 100 for 2 days, then was normal. Sputum showed no type reaction to pneumococci. White count was 8,100, with 52% polymorphonuclear cells. On looking back again, I believe this patient did not have pneumonia.

Case 46921. Age 7 months. This child had had an elevated temperature for 3 days. Two days before admission it had begun coughing. No examination of chest is recorded except the statement that the child had pneumonia. Temperature went up to 102.6 rectal shortly after admission; then dropped fairly rapidly to nearly normal, where it remained. Sputum was positive for Type X pneumococci. White count was 11,950, with 32% polymorphonuclear cells. One wonders if this child had had pneumonia. No specific treatment was given.

These five cases have had a white count below 16,000 and as low as 8,000, with polymorphonuclear cells count ranging from 89% to 32%. We might wonder without x-ray evidence if all of these were not acute bronchitis. However, we have some evidence to doubt that.

Case 46495. Age 12. This patient developed headache 4 days before admission and had felt drowsy, with elevated temperature. He had very little cough; no pain; no dyspnoea. Chest showed dullness, with rales in the lower right lung. Sputum showed no type reaction to pneumococci. However, shortly after admission this patient's temperature went up to 103.8. It ranged above 103 for about 36 hours, and then came down to normal. White count was 10,300, with 51% polymorphonuclear cells. This was a true pneumonia.

Case 46573. Age 21. This patient had an elevated temperature for 4 days. The morning of the day of admission he developed a severe cough and pain in his chest. Physical examination showed rales in the right base posteriorly and some dullness. On admission this patient's temperature was 104. It ranged between 104 and 105 for 4 days before coming down to normal. Sputum showed no type reaction to pneumococci, although pneumococci were found. On admission this patient's white count was 7,850, with 73% polymorphonuclear cells, and while in the hospital the highest count was 8,100, with 82% polymorphonuclear cells. This was certainly definite pneumonia with very little evidence of severe infection as shown by the white count although this count may have meant a low resistance, or influenza.

Case 47291. Age 13. This patient began feeling badly about one week before admission, and was running a very little fever. Had headache; no cough. Two days before admission he developed pain in his left chest. Physical examination showed a few scattered rales in the left base. On admission his temperature was normal. It remained nearly normal, going up to 100 twice in the next 2 days. Sputum typing showed Type XVIII pronounced. White count was 8,400, with 66% polymorphonuclear cells. We would doubt whether this patient had pneumonia if we were considering the clinical course and blood count, even though the sputum showed positive type reaction. However, x-ray was taken.

These cases seem to show that we cannot depend on the white count, and not always on physical findings and clinical course to determine defi-

nitely that a patient has or has not pneumonia. On none of these cases was the non-filament count recorded. In going through some of the other records I noticed some counts below 10,000, with 25-30% non-filament, and x-rays showed positive pneumonia. I also noticed some cases with a count between 15,000 and 20,000 or higher, with a non-filament count of 5% to 7%, and x-rays showed definite pneumonia.

I doubt whether we can depend too much on any laboratory procedure aside from x-ray to differentiate acute bronchitis or acute influenza with bronchitis from a true pneumonia. From these few case findings we might conclude that to definitely determine whether a patient has or has not pneumonia by laboratory methods, x-rays are required.

15 E. Monroe.

Management of Surgical Lesions of the Biliary Tract*

GEORGE B. KENT, M. D.
and
KENNETH C. SAWYER, M. D.
Denver, Colo.

THE more we analyze statistics from the large medical centers in this country and the more personal experience we have with diseases of the biliary tract, the more we are impressed with the fact that the good end-results from surgery are obtained only when early and sufficient surgery is performed.

The available information at hand plus a moderate personal experience shows that a high percentage of the population is suffering from a greater or lesser degree of disease of the biliary system. According to Eliason and North about 60% of the complaints made to the physician are referred to the gastro-intesinal tract. They believe that 30% of the people of the United States, after the age of 45 years, are suffering from biliary disease.

The clinical history and physical findings will lead one to make the correct diagnosis in a high percentage of the cases. The additional use of laboratory tests at hand; that is, x-ray, dye test, blood examination, and biliary drainage, will increase our diagnostic acumen to a high degree of efficiency.

REASONS FOR SURGERY

Once a definite diagnosis of cholecystic disease is made, surgery should be advised. Medical men who keep these patients under observation and treatment for any appreciable length of time are, no doubt, in ignorance of the pathological processes taking place and the deleterious effect that will be brought about in the liver and pancreas if these processes are allowed to continue. The changes are irreparable and the cause of the poor surgical end-results. Early surgery would prevent chronic hepatitis and pancreatitis. The patient should obtain normal digestion if the chronic inflammation is stopped early in the disease. No surgeon should lead a patient who gives a long history of biliary disease to believe that surgery will cure his condition. These patients should always be warned or advised before operation that the progress of the disease will be stopped, but no promise should be made as to the amount of improvement to expect; only time will tell.

Read before the New Mexico State Medical Society, Gallup, New Mexico, May 11 to 13, 1939.

EFFECTS ON LIVER AND PANCREAS

The liver and pancreas are the two most important organs which are affected by disease of the biliary tract. Because of their manifold physiologic activities, it is obvious that any disease which depresses or temporarily inhibits these properties will greatly affect the organism as a whole. From the time the patient comes under observation until he is dismissed from the hospital the hidden and often unappreciated activities of the liver and pancreas are probably more important in keeping the patient alive and make for a more succesful outcome of the case than some of the other organs which are so closely observed by the physician; that is, the heart and kidneys.

The most important known functions of the liver have to do with metabolism. The liver is essential for the metabolism of each of the major foodstuffs. It keeps food in storage and has it constantly available for the use of the organism regardless of the rate the food reaches the body. Carbohydrates are stored in the form of glycogen, and glucose is manufactured from other substances. The liver regulates the amount of glucose in the blood, making a constant amount at all times for all the tissues, especially the muscles. Any underactivity in the amount of glucose available will result in hypoglycemia. Any over-stimulation of the liver may produce a hyperglycemia. The liver is probably always involved, directly or indirectly, in hyperglycemia or hypoglycemia.

According to Mann, the liver is a storehouse for proteins. It deaminizes the amino acids and forms urea. In the former process it manufactures glucose from protein and in the latter it transforms the waste portion of the amino acids into a substance readily excreted from the body. The liver is also a storehouse for fat. It will absorb and store as much as 40% of its weight in fat when the individual is on a diet rich in fat. The fat content of the liver will also increase after the administration of certain substances which injure the organ.

Hepatic activity is involved in the metabolism of some of the inorganic elements of the body, particularly minerals, which are excreted in the bile. The best known function of the liver is the

excretion of the bile. The excretion takes place constantly, but the rate varies. Ingestion of a meal will cause an increase in th amount of flow of bile.

The liver protects the organism from many injurious agents. It is only logical then that the liver should be kept in a healthy state as long as possible. A liver rich in glycogen is more resistant to most of the injurious agents than a liver poor in glycogen. No doubt many factors affect the rate of development as well as the character of a hepatic lesion. According to Mann, the diet is one of the most significant factors. Animals with a lesion of the liver will live much longer on a carbohydrate diet than those on a meat diet.

We know that repeated insults to the liver, whether they are infectious or chemical in nature, will eventually change the pattern of the hepatic lobule to one of cirrhosis. One can anticipate then what will happen to any liver which is constantly or repeatedly insulted by infection as occurs in chronic cholecystic disease. It is true that only a small amount of normal liver tissue is necessary to carry on all the functions of the liver. It may also be true that the chronic dyspeptic suffering from chronic cholecystic disease may live many years, but certainly he does not feel normal during any of that time.

ACUTE CHOLECYSTITIS

The management of acute cholecystitis, according to recent literature on the subject, is quite a debated question at the present time. The question of when to operate upon these patients is probably not such a serious matter as one would think from reading the literature. Our reaction would be that any well qualified surgeon with experience in the treatment of cholecystic disease would not have a set rule, but would operate at the "opportune time." The opportune time may be within a few hours of the initial attack in one case and may be deferred for a week or more in another. The age, general condition of the patient, presence or absence of diabetes, cardiac or renal disease, and other constitutional disorders will alter the decision as to the proper time to intitute surgery. The proper advice of immediate surgery in a young, otherwise healthy person may be entirely the wrong advice in an aged patient with diabetes and cardiac disease. All patients should have a thorough evaluation of their general condition and their ability to withstand a major operation. Necessary preoperative treatment should be given. The operation of cholecystectomy should be done when possible to get thorough exposure and proper visualization of the ducts and cystic artery. Serious conditions of the aged patient suffering from cardiovascular renal disease and from complications such as jaundice, pancreatitis, or carcinoma, will argue against cholecystectomy in favor of cholecystostomy and a lower mortality rate. In dealing with these cases the surgeon must not only realize his own limitations, but also those of his patient.

Preoperative care and preparation should begin as soon as a definite diagnosis of cholecystic disease has been made. In the acute case, in which the need for surgery is immediate, the patient is hospitalized, the general condition evaluated and glucose solution administered intravenously. Time will usually allow for a cleansing of the colon by enemas. Nothing but liquids should be given by mouth, supplemented by saline and glucose solutions intravenously for from 24 to 48 hours before operation. The usual abdominal preparation is made the night before, and a hypodermic injection of morphine and atropine is given one-half hour before the time set for the operation. In our small series of 179 cases this procedure was followed in only 6 acute cases.

In most cases the surgeon has plenty of time to do what he considers necessary to make the patient a good or better operative risk. If the patients are obese they are given a low caloric diet until the weight is reduced sufficiently. Hypothyroidism, if present, is corrected by the administration of thyroid extract. Observation and frequent checks on the basal metabolism are made over a period of from 3 to 6 weeks. Any associated diseases, such as diabetes or cardiovascular renal disease, are treated by someone qualified to do so, for as long as necessary to give the maximal improvement.

As soon as maximal improvement in the general condition has been made the patient is hospitalized, usually 3 or 4 days previous to the time set for the operation. During the preoperative stay in the hospital attention is paid to thorough cleansing of the bowel by repeated enemas. A non-residue diet with a high caloric value is given along with large quantities of fluids and sedatives sufficient to insure good rest. A liquid diet of a high caloric value is given for 24 hours, perhaps supplemented by 1500 cc. of a 5% solution of glucose in saline intravenously every 24 hours.

The jaundiced patient needs all of the foregoing care plus some special attention. If the jaundice is associated or complicated by an increased prothrombin time, one or more blood transfusions are given. A transfusion of from 200 to 300 cc. of blood is given the morning of the operation. The advantage of the preoperative use of preparations of vitamin K in the jaundiced patient will no doubt be of great help in the successful outcome of the most severe cases. We have not had enough experience in its use to make a definite statement as to its benefit. The recent literature is full of good reports and one should not hesitate to use it when the indication arises.

The anesthetic should be of the surgeon's choice. Spinal, splanchnic block, local infiltration, and rectal anesthesia are to be used by those who are proficient in their use. The qualifications for the proper anesthetic is one that will give good relaxation and not injure the hepatic cells. We have been in the habit of using cyclopropane because of the high concentration of oxygen; it must be administered by an expert in order to get the proper upper abdominal relaxation. After the operation

is over the patient is usually rational and can rid himself of mucous and vomitus should vomiting occur.

The technic of the different surgical procedures to meet the different pathologic conditions found is not pertinent to this paper. The essential points are to have good exposure so that all the structures are accurately visualized and so that sufficient surgery for that given case can be done. It is here that the judgment, experience and ability of the surgeon and the condition of the patient should dictate the type and extent of the operation. We always use some sort of drainage for a few days, in order to prevent biliary peritonitis. We lost one patient by neglecting to do so.

The postoperative care is usually that of any major surgical case, except that attention must again be paid to the giving of sufficient glucose solution intravenously to keep the liver in as good condition as possible. We usually give 1500 cc. of a 5% glucose in saline twice a day. Repeated blood transfusions are given if indicated. We frequently return the bile to the gastro-intestinal tract by giving it to the patient in grape juice. The administration of thyroid extract is carried on after the patient is able to retain it postoperatively. This we believe keeps the blood circulating more rapidly and therefore obviates the formation of thrombi in certain cases. All oral administrations of fluid are withheld for from 12 to 24 hours, or until nausea ceases. Gastric lavage or constant siphonage is used at the least provocation and as long as indicated. Saline proctoclysis is given routinely. Enough fluids should be given parenterally to cause an excretion of 1000 cc. or more of urine in 24 hours. Carbon dioxide is given every 30 minutes for the first 24 hours to encourage deep breathing. The patient is placed in the semi-Fowler position and moved from side to side frequently. The nurse is instructed to move and massage the patient's legs at least three times a day. Water and a liquid diet are given as soon as nausea ceases. Soft to full non-residue diet is given after the bowels have moved, or after the temperature approaches normal. The usual or average postoperative hospital stay is 12 days.

Good advice for the beginning or young surgeon is not to attempt surgery of the gallbladder or ducts until he has become thoroughly equipped with knowledge of the anatomy, physiology and surgical pathology of the biliary tract, and then only after he has assisted in enough cases to be sure of himself.

In closing, I would like to make a plea for earlier diagnosis and earlier advice as to the proper treatment of surgical lesions of the biliary system. Only by early surgery will cures be obtained. Most of this responsibility is upon the internists' shoulders, as it is to them that patients go for advice.

During the past 15 years we have made a diagnosis of some surgical lesion in the biliary system in 588 cases and have given the proper advice in most cases, but have only had the opportunity to correct that condition in 179 cases. It is a significant fact that only approximately one-third of the patients accepted the advice given. It is from the observation of the 179 cases that we have come to the definite conclusion that early surgery offers the best chance for a cure. (Tables 1 to 4.)

1612 Tremont Place

TABLE 1—INCIDENCE

	Cases
Males	29
Females	150
Total	179
Youngest patient age years	13
Oldest patient age years	73
Average age years	40.8

TABLE 2—RESULTS

	Cases
Patients operated upon	179
Patients living	171
Patients dead	8
Operative mortality	
Per cent	4.4

TABLE 3—CAUSES OF DEATH

	Cases
Postoperative pneumonia	3
Bile leakage into abdomen	1
Obstruction of common duct—Carcinoma of head of pancreas	1
Hepatic insufficiency	1
Multiple pulmonary abscesses	1
Cardiac failure (?)	1
Cause not stated	1
Total	8

TABLE 4
RESULTS FROM ONE TO FIFTEEN YEARS AFTER OPERATION*

	Cases	Per cent
Questionnaires returned	81	
Results:		
No improvement	9	11.11
Slight improvement	13	16.04
Marked improvement	20	24.7
Normal digestion	39	48.14

*Data obtained from questionnaires.

Unusual Positions and Conditions of the Vermiform Appendix

DELBERT L. SECRIST, M. D.
Tucson, Arizona

THIS paper is the direct result of a missed diagnosis. Recently a 30-year-old white male presented with a more or less typical history and the physical findings of an acute cholecystitis. Because of the facts—that the acute onset had been some 36 hours before we saw the patient, and that the patient was then much more comfortable—immediate operation, although advised, was not insisted upon. A word of warning, however, was given that should the discomfort become any more severe, immediate operation should be done. The patient continued to improve for the next 48 hours, when very suddenly he was again seized with acute agonizing, shocking pain in the right upper quadrant, which pain radiated into the back. Immediate surgery was done, and, much to our surprise and chagrin, there was not an acute cholecystitis, *per se*, but, instead, a large, bulbous, acutely gangrenous appendix with a perforation the size of a nickel in the bulbous tip. This gangrenous, puro-

fibrinous mass was plastered to the base—not the tip—of the gall bladder and to the under surface of the liver. There was, needless to say, already a widespread, generalized peritonitis, and in spite of transfusions and other supportive measures the patient went on to expire some 3 days post-operatively. The patient had at no time showed any direct signs or symptoms to lead one to a diagnosis of appendicitis. So, since the appendix was found at operation to be in such an unusual position, a more or less extensive search was made into the literature regarding the uncommon positions and conditions of the vermiform appendix, and this paper is the result of that search.

EMBRYOLOGY

In intra-uterine life the gut, and consequently the appendix, is derived from the so-called middle-germ layer or entoderm, and first takes the form of a more or less straight tube which, for purposes of description, is divided into the fore, middle and hind guts. From the fore-gut, by differentiation and specialization, develops the liver, gall bladder, bile ducts, stomach, pancreas, oesophagus and the structures associated with the pharynx, namely, the thymus, thyroid, tongue and lungs. From the mid-gut arises the small intestines, and from the hind-gut the large intestines and bladder.[9] We are, of course, here concerned chiefly with the mid-gut. Jacobs[14] quotes Dr. Harold Cummings of the Department of Anatomy of Tulane University at New Orleans as saying, concerning the development of the gut, "In the human embryo entering the second month of development, the intestine is drawn toward the umbilical cord in the form of a simple U-shaped loop, the yolk stalk arising from its apex. The divisions of the intestinal loop are designated cranial and caudal limbs, in description of their relative positions at this period. The jejunum and a part of the ileum are represented in the cranial limb, while the remainder of the ileum and the entire colon arise from the caudal limb. There is, as yet, no generalized increase in the diameter of the segment which is destined to form the colon." The cecal process, or caecum, arises as a slight bud in the middle of the caudal limb during the fifth week.[16] It increases in length, and its end tapers so that in the eighth week it becomes a conical projection. The caecum then begins to widen, but its terminal portion remains narrow and becomes the appendix. During the third month the cecum, or wider proximal portion, expands so as to exceed the caliber of the neighboring colon. Later, fetal development is characterized by heightening of the size differences between the appendix and caecum, although it is not until after birth that an abrupt demarcation between the two is acquired. The caecum becomes sacculated from the accumulation of solid fecal matter within it, and thus the adult form of the caecum is attained. The three longitudinal bands, or taeniae, of the intestine meet at the base of the appendix, and are, at first, equally spaced around the caecum; however, the protruding sacculations separate the taenia to a variable extent, and hence the caecum attains its asymmetrical form. Accompanying all these changes in form is a corresponding change in position. The original primary straight intestinal tube with its mesentery was just to the left of the midline.[22] Then as the large and small bowel start developing and elongating (the small much more rapidly than the large), the coils of the small bowel fall to the right side, while those of the large intestine remain on the left side.[25] During approximately the fourth month of gestation[17] the colon becomes rotated upon itself so that the large intestine is carried over the front of the small intestines. This causes the caecum, with its appendix, to leave its position in the left side of the abdomen, ascend, and with its mesenteric attachment acting as a sort of handle, rotates in the form of a partly open fan to land at the under surface of the liver at the fifth month. There, as the length of the colon increases, its course to the right is deflected downward by the liver, until, at about the sixth intra-uterine month, it reaches its normal position in the right iliac fossa, and becomes more or less adherent to the posterior abdominal wall.

ANOMALIES

Arrests of development in the differentiation of the caecum and appendix, or in the ascent, rotation and descent of these organs, may occur at any stage of the process, and the conformations which arise are correspondingly varied. Hence, we may find a normal appendix and caecum anywhere in the arc from the left side of the abdomen up around the epigastrium and under surface of the liver down over the front surface of the right kidney to the right iliac fossa, and if the mesenteric attachment be unusually long and mobile, even down into the pelvis. Or, on the other hand, all forms of abnormally developed appendices and caecums may be found at any point over the same route. There may be even a complete absence of either or both the appendix and caecum, although this anomaly is exceedingly rare. Bradley[2] found two cases of congenital absence of the appendix in 8,102 examinations in the autopsy or dissecting room. Heineck[11] in 3,550 autopsies at Cook County Hospital did not find a single case of agenesis of either the appendix or caecum. On the other hand, Dorland[7] reported 35 cases of absence of the appendix. J. B. Deaver[8] reported the only case of absence of both that I could find in the literature that I had available.

I think it is now obvious that in our case of suspected acute cholecystitis with which we started this paper, the process of rotation referred to in the last paragraph ceased at the fifth month of embryonic life, and the appendix remained in contact with the gall bladder and under surface of the liver, where it was found at surgery and which can readily explain the gall bladder symptoms.

Another uncommon anomaly which has to do with arrest in development during the rotation of the caecum and appendix is the so-called retroperitoneal or extraperitoneal appendix. This comes

about by the developing mesentery and peritoneal coat failing to somewhat surround the migrating caecum and appendix, and as these start descending on the right side they usually become fixed to the posterior abdominal wall in the region of the right kidney and have the peritoneum merely spread over them rather than enveloping them. These are the cases which, when inflamed, not only resemble but actually may cause perinephritic abscesses. Strauss[28] reported five such cases of retroperitoneal appendices, one of which was removed through the incision into an extraperitoneal abscess in the perinephritic area. These, if farther descended, may also resemble a psoas abscess. Marbury[17] says these extraperitoneal or retrocolic appendices constitute about 7% of all cases.

Another position of the appendix which is given an anomalous classification but which is seen in 9% of cases is where the appendix is closely adherent to the posterior surface of the caecum, and is commonly spoken of as a retrocaecal appendix. Meyer and Spivak[19] call attention to this type of appendix and to its association with the so-called Lane's kink, or the attachment of the terminal part of the ileum to the brim of the pelvis.

Still another anomaly of the single appendix is the so-called giant or cystic appendix. This, of course, is not congenital, but is a degenerative process developing some time after birth. About 183 of such cases have been reported, the largest being about the size of an adult human head.

A number of cases of double colons, caecums and appendices are reported in the literature, but I will only discuss these very briefly. If anyone is especially interested in this phase, Greig, in the *Edinburgh Medical Journal* for April, 1934, in an article entitled, "Processus Vermiformis Puplex," presents a most complete summary of the literature on the subject. Some authors are very skeptical about there being such an anomaly as a double appendix, but there are certainly enough dependable surgeons who have reported such cases to vouch for their existence. All authorities, however, agree that certainly over 98%[5] of the reported cases of double appendix are the result of a previous acute inflammatory process to a single appendix which went on to necrosis and spontaneous division after fibrinous adhesions had been set up between the tip and the adjacent mesentery, colon, or ileum. Another duplication and one that perhaps is even more rare is the double lumen appendix. The earliest suggestion of this condition was by Rosenberger[21] in 1903, when he reported finding it at the post mortem of a carcinoma case. Prentiss[20] in 1907 presented a microscopic slide of an appendix having two distinct lumina. To illutsrate this anomaly we have the good fortune of also being able to present to you a microscopic slide of a double-lumined appendix. This specimen was removed at operation at the County Hospital about two or three months ago from an early middle-aged white male, who had presented with a more or less typical history and the physical findings of an acute appendicitis. Dr. Lindberg prepared the specimen and has kindly loaned us the slide to show to you.

Another similar anomaly is the two-limbed appendix described in 1924 by Elwyn.[8] Other duplications have been described, but I think, in their connection, it will suffice to quote the concluding line of Greig's[10] article to which we have already referred: "The vermiform processes may be altogether apart; they may have become separated after the most distal—that is, the earliest—part had formed, and with or without bifidity of the extremity they may have formed a double-barrelled organ which may or may not have a common communication with the caecum."

CLINICAL SIGNIFICANCE

Now, why so much ink about the unusual positions and anomalies of the appendix when they are so relatively rare? Because these conditions must be borne in mind by the operating surgeon and emphasized from time to time if the still much too high mortality rate of appendicitis is to be reduced. For instance, if on opening the abdomen of a suspected case of appendicitis a normal appendix presents itself, recalling the case of Schooler[23] may prevent one much later embarrassment. This author found free fluid in the abdomen and a normal looking appendix. However, further search revealed a smaller acutely inflamed and perforting appendix about 20 mm. below the normal one.

Of course, much more important than the anomalies is the bearing in mind of the unusual positions and the conflicting signs and symptoms they may present. Amory,[1] in an article on abnormal positions of the appendix and "The Direct Bearing on Appendiceal Mortality," classifies these unusual positions of the appendix in five groups:

1. Those due to anatomical displacement, in which he states those appendices having a long mesentery enjoy a wide range of latitude and are liable to infection because of the predisposition to irritation. When the caecum is mobile the appendix may be found any place in the abdomen, and consequently may simulate any intra- as well as extra-peritoneal conditions. Perhaps the most common mistake in this connection is the diagnosis of acute salpingitis when there is really a true pelvic appendicitis.[4] Cases have been reported of the appendix being the sole contents of an inguinal hernia.

2. Those due to pathological displacements, where, because of previous inflammation with resultant adhesions, the appendix is pulled to a new bed. This condition is seen most often in pelvic inflammatory disease, in acute upper abdominal conditions, acute nephritic pathology, etc.

3. Those cases displaced by pressure from pregnant uteri, tumors, etc.

4. Congenital malpositions, which, in addition to those of which we have already spoken, would also include those cases of true situs transversus of transposition,[12] together with those cases which Blake[2] describes as causing functional disturbances

of the intestine. In these latter cases, either because of a short, poorly developed meso-appendix or because during foetal descent of the caecum the appendix became fixed to the posterior abdominal wall and with continued growth and descent of the caecum there is a more or less buckling of the colon and caecum, causing some obstruction and constant tugging on the fixed appendix, and hence simulating appendicitis without any true inflammation.

5. Those cases associated with other inflammatory processes and temporarily overshadowed by them, as illustrated by the frequent clearing up of gall bladder, ulcer, or other upper abdominal symptoms by the removal of a diseased appendix.

With regard to these unusual positions and conditions, what are some of the things that will help us in our diagnosis, and help us to avert some of the pitfalls which so often occur? A number of authors have taken the cardinal symptoms of appendicitis and listed them relative to their frequency in these unusual cases. These are approximately as follows:

1. Pain—100%.
2. Local tenderness—89%.
3. Leukocytosis—79% to 95%.
4. Increased polymorphonuclear cells—90%.
6. Elevated temperature—68% to 84%.
6. Elevated pulse—44% to 84%.
7. Rigidity—40% to 65%.
8. Nausea—35% to 65%.
9. Increased tension—25% to 43%.

Then, besides these so-called cardinal symptoms, the symptoms relative to the organ against which the appendix may be plastered must also be kept in mind. Hoaglund,[13] in a review of 150 cases of ruptured appendix, says that appendicitis is still responsible for 25,000 deaths annually. The mortality rate is so high because of cases which go on to rupture before operation, and he states that in his series of 150 cases, "the variations in position demonstrate that the anatomical placement of the appendix in out-of-the-way locations is largely responsible for the lack of recognition of appendicitis within a sufficient period of time to allow for the removal of the organ before its rupture." Hence, if one is to avoid perforation in these variably placed acute appendices and thus aid in the reduction of the existing mortality rate, early operation seems to be the only choice of procedure. Or, as Hoaglund[13] says, "The dictum follows in case of questionable acute appendicitis: Operate."

In conclusion, let me reiterate and re-emphasize the fact that although appendicitis is the most frequent problem we have to deal with in surgery, and that although appendectomy can be at times one of the easiest of surgical procedures, nevertheless, mainly because of frequent unusual positions and conditions of the appendix, producing various atypical pictures, it is not, and never will be, a simple problem; and because of the missed diagnoses, with resultant increase in the mortality rate from perforation, it behooves everyone doing general surgery to acquaint himself with, and to frequently review himself on, the abnormal conditions and locations of the vermiform appendix.

SUMMARY

1. The embryological development of the vermiform appendix and the caecum is briefly presented.

2. A case is presented illustrating arrest in the rotation of the caecum and appendix on the under surface of the liver—at about the fifth intrauterine month—with later acute inflammation resembling gall bladder disease.

3. Various abnormal positions and conditions of the appendix are mentioned, with short discussions about several of these cases.

4. Relative frequency of cardinal signs and symptoms are presented with the idea of evaluating their presence as an aid in the diagnosis of these atypical cases.

5. Inability to correctly locate the position of the appendix is presented as being responsible for the the still high mortality rate of appendicitis, whether operated or not,[13] and a plea is made for early operation, especially in the questionable cases.

---

123 So. Stone Avenue

BIBLIOGRAPHY

1. Amory, O. T. The Relative Frequency of the Various Abnormal Positions of the Vermiform Appendix and the Direct Bearing on Appendiceal Mortality. Virginia Medical Monthly, 1928, IV., 118, May.

2. Blake, J. A. Malposition of the Appendix as a Cause of Functional Disturbance of the Intestines. Annuals of Surgery, 1905, Sept.

3. Bradley, J. I. Congenital Absence of the Vermiform Appendix. Arch. Surg., 18: 1904, 1929.

4. Brunn, H. Acute Pelvic Appendicitis. Surg., Gynec. & Obst., 1936 IXIII, 583, Nov.

5. Collins, D. C. Pseudoduplication of the Vermiform Appendix. S. Clin. N. Am., 1931, XI, 921, Aug.

6. Deaver, J. B. and Ashhurst, A.P.C. Surgery of the Upper Abdomen. Phila., P. Blakiston's Sons, 1909.

7. Dorland, W.A.N. Congenital Absence of the Vermiform Appendix. Internat. Clinics, 1925, LV, 4-4-54.

8. Elwyn, A., A Double Human Appendix. Anat. Record, Phila., 1924, XXVII., 160.

9. Grays Anatomy—Embryology.

10. Greig, David M., Processus Vermiformis Duplex. Edinburgh Med. Journ., 1934, XII., 277, April.

11. Heineck, A. P. Abnormalities in the Position and Form of the Vermiform Appendix. Illinois Med. J., 1934, IXVI, 488, Nov.

12. Hembrow, C. H. Some Anomalous Forms of Appendicitis. Med. J. Australia, 1932, I, 862

13. Hoaglund, A. W. Perforated Appendicitis. Med. J. and Rec., Sept. 7, 1932.

14. Jacobs, A. Anomalies of the Appendix. Am. J. Surg., 1928 IV., 500, May.

15. Jonas, A. F. Undescended Cecum and Vermiform Appendix. J. A. M. A., 1921, IXXVI, 1821, June 25

16. Jordan, A. C. The Congenital Undescended Caecum. Brit. J. Radiol., 1937, X, 743, Oct.

17. Marbury, W. B. The Retroperitoneal (Retrocolic) Appendix. Ann. Surg., 1938, CVII, 819, May.

18. McKinnon, A. I. Nebraska Med. J., 13, I, 1928.

19. Meyer, K. A. and Spivack, J. L. Retrocecal Appendix and Lane's Kinks. Am. J. Surg., 1934, XXV, 12, July.

20. Prentiss, E. C., A Double Appendix. Wash. Med. Ann., 1907, V., 25.

21. Rosenberger, R. C. An Appendix Vermiformis with A Double Lumen. Proc. Path. Soc., Phila. 1903, XXIV., 206.

22. Schooler, L. Two Appendices Instead of One. Iowa Med. J., 1907.

23. Strauss, A. Clinical Aspects of Disease of the Extraperitoneal Appendix Vermiformis With Report of Cases. S. G. & O., 1915, XXI., 318.

The Management of Diabetes

PHILIP CORR, M.D.
Riverside, Calif.

PERHAPS the best way to discuss the management of diabetes is to follow the steps taken in handling an average case of diabetes mellitus.

An old recipe for making rabbit pie starts out with the admonition to "first catch your rabbit." In this instance we must first get our case of diabetes by being sure of our diagnosis. This is particularly important because of the practicality of the dictum, "once a diabetic always a diabetic."

DIAGNOSIS

Usually the diagnosis of diabetes mellitus is first suggested by the finding of sugar in the urine. Unless this is associated with cardinal signs of diabetes such as weight loss in spite of heavy eating, excessive urination with marked thirst, and persistent, marked glycosuria, possibly with signs of acidosis, the diagnosis should not be made without finding a high fasting blood sugar of at least 120 mg. per cc. In case of doubt the question may rarely need to be settled by a glucose tolerance test. Glycosuria alone is not sufficient cause for calling a patient a diabetic. Renal diabetes, physiologic glycosuria such as from fright, reduction of the copper sulphate solutions by ingested materials such as aspirin, are common enough to be a real source of confusion. One not infrequently finds people on diabetic diets for years where it is probable that diabetes never existed.

It is most important to be sure of this first step in the management of diabetes, *i. e.*, making sure of the diagnosis.

The next step is to determine the severity of the diabetes. Is our patient in a state of acidosis requiring immediate, most careful management or can his case be handled less strictly? If there is acidosis as evidenced by the presence of considerable diacetic acid the patient should be treated as a case of impending coma. Gerhardt's ferric chloride test for diacetic acid should be utilized whenever a moderate or large amount of sugar is found in the urine. The matter of treatment of coma will be considered later. For the present we shall assume an uncomplicated case of moderate to mild severity. This is by far the most common type encountered.

With this average diabetic before us we explain to him the advisability of following the rules we are about to suggest, informing him briefly of the nature of diabetes as well as its course, assuring him that his understanding and co-operation will pay him large dividends. They are invariably advised to get and study some handbook on diabetes to supplement the office discussion.

DIET

Next one outlines the diet. With or without insulin no diabetic can afford to be uninformed about this basic part of the treatment of his diabetes. Generally speaking, the important thing to emphasize is that the patient should eat approximately the same type and quantity of food day after day until he learns to substitute other foods later. Instead of following some set diet it has been my custom to insist on the patients taking certain basic foods or adequate substitutes and then adding what they wish, avoiding the foods rich in carbohydrates. For instance, they should eat daily one good serving of lean meat, one or two eggs, two or three glasses of milk, three fresh or water-packed fruits, and a selection of vegetables as desired, usually avoiding or limiting potatoes and other vegetables above the 10% carbohydrate class. Substitutes can be given for each of these important food if desired. One slice of bread of any kind is usually allowed with each meal. Butter, mayonnaise and bacon are used to help increase calories. In general, alcoholic and soft drinks are avoided, but tea, coffee and clear or vegetable soups are allowed.

This a fairly satisfactory and easy diet to prescribe or to follow. It aims to provide adequate protein, a moderate amount of carbohydrate and sufficient minerals and vitamins. Greater care can be exercised in reducing the carbohydrate content by more careful consideration of the fruits. vegetables and bread intake, where such care will allow a patient to get along without insulin. Usually the mild cases can get along without insulin with the above-mentioned diet or the moderately severe diabetics will require insulin in spite of a more stringent diet. Caloric requirement can be adjusted by fat intake. One aims to keep diabetics a trifle underweight.

URINALYSES

The important step following the handling of the diet is to teach the patient to examine his own urine and bring in a written record for the doctor to observe his progress. Apart from hospitalization of the patient there is no other way to satisfactorily control the patient's diabetes. He must be taught some simple test such as Benedict's qualitative test. It is important that he be provided with proper solutions and be properly instructed about testing for sugar in the urine. For economy's sake 2.5 cc. of Benedict's solution with 4 drops of urine can be used instead of the usually prescribed 5 cc. with 8 drops of urine. The tube should be scratched with a file mark to prevent too much guessing. After 5 minutes of a water beaker or 1 minute boiling over the flame, the tube should be shaken and the color reaction recorded as blue, green, yellow, red, etc.

The tests should be made four times daily; before breakfast and about 3 hours after each meal until the diabetes is well under control. Then one test daily with the four tests being done once a

Read before The New Mexico Medical Society, at Gallup, N. M., May 11-13, 1939.

week will usually suffice. Whenever a new food is tried or when changes in insulin dosage are made or whenever illness, shock or injury is present four tests daily should be recorded. With this record it is easy to advise the patient about the handling of his case. Without adequate records the doctor can hardly advise the patient intelligently. The four tests can be done at one time during the day from specimens saved for the purpose.

The following is an example of the type of record to be kept.

	7 a.m.	Ins.	10 a.m.	Ins.	3 p.m.	Ins.	9 p.m.	Remarks
5/4/39	Red	0	Red	0	Red	0	Red	
5/5/39	Yellow	0	Red	0	Red	0	Yellow	
5/6/39	Yellow	0	Yellow	0	Yellow	0	Yellow	
5/7/39	Green	0	Yellow	0	Green	0	Green	
5/8/39	Blue	0	Green	0	Blue	0	Blue	
5/9/39								

Generally, if the urine is kept sugar free the great majority of the time the patient's diabetes is for all practical purposes controlled. If the glycosuria is not controlled diacetic acid tests and blood sugar levels help to estimate the situation more correctly. When the urine reports are not available blood sugar reports become increasingly valuable. In the juvenile types of diabetes one tries to keep the blood sugar level approximately normal. In the older group one tries to keep the blood sugar level below 150 mg. of glucose per 100 cc. of blood. But practically speaking, with cooperation with urinalyses, blood sugar levels are unimportant. Just what, if any, harm a high blood sugar without glycosuria does is not definitely known.

INSULIN

After watching our patient along for a week or so and noting progress in signs and symptoms we may discover that we cannot control his diabetes satisfactorily on diet alone. Insulin is advised. Generally one uses protamine zinc insulin because it is a long lasting insulin requiring only one injection a day. This is usually given before breakfast, starting with 10 units of U 40 daily if the diet has nearly but not satisfactorily controlled the diabetes. If the urine test is not normal within a few days one increases the insulin dosage by perhaps two units daily until the glycosuria is controlled. If the glycosuria is controlled consistently for a few days one reduces the dose of the protamine zinc insulin to a point where one occasionally has some slight reduction of the Benedicts solution. In this way one avoids hypoglycemic reactions, which, while less common with protamine zinc insulin, are more severe.

With the chart of the urinalysis results one can tell where if any place that the patient is "spilling over," and reduce the food intake for the preceding meal, *e. g.*, if the 3:00 p. m. specimen always shows marked reduction of the copper sulphate solution the carbohydrate intake for the noon dose should be reduced and added to some other meal or eaten at night.

Such "juggling" will usually control the situation. Occasionally it is necessary to give supplementary old or regular insulin at appropriate times in the more difficult cases. It must be remembered that the old insulin has its maximum effect from 2 to 4 hours after administration, while protamine zinc insulin has its maximum activity from 12 to 24 hours after administration. In fact, its action is so prolonged it has a cumulative effect like that of digitalis, which means that a given daily dose of this long lasting insulin has its maximum cumulative effect several days or a week after it is given.

Hypoglycemic reactions from protamine zinc insulin occur usually in the early morning and consist mainly in drowsiness, or headaches, or numbness and tingling of the fingers and mouth, or nausea or vomiting. Rarely paralysis and coma develop. Hypoglycemic reactions from the unmodified, old, or regular insulin occur usually within a few hours after injection of the insulin and consist in trembling, weakness, sweating, mental confusion, drowsiness and in severe cases convulsions and coma. The treatment for both is providing adequate amounts of sugar, recalling that the sugar intake in the case of protamine zinc insulin cases will have to be repeated over a period of several hours as the excessive dose of insulin is still being absorbed.

An injection of 0.5 cc. of adrenalin will often hasten recovery by liberating glycogen from the liver. Most hypoglycemic reactions are recovered from spontaneously.

REACTIONS

Coma must be differentiated from a hypoglycemic reaction. Without glycosuria and diacetic acid in the urine there is no coma. The matter is serious enough so that estimations of blood sugar and carbon dioxide combining power of the blood should be utilized where possible. Diabetic coma is a major medical emergency. It means usually that someone has blundered. The treatment depends chiefly on the degree of acidosis. With acidosis evidenced by a positive diacetic acid test plus glycosuria insulin therapy is required. With severe acidosis and impending coma absolute bed rest is insisted upon and a minimal dose of at least 50 units of the old insulin, supplemented with an injection of 50 units of protamine zinc insulin is given. Fluids are forced by whatever route necessary to get in 3000 to 4000 cc. in 24 hours, as these patients are always dehydrated. The patient is kept warm. A warm enema is usually given. Urinalyses are made every 2 hours, catheterizing the patient if necessary. Ten to 25 units of unmodified insulin are given every 2 hours, depending on the amount of glycosuria and diacetic acid present. As the patient improves the intervals for testing the urine are lengthened and the insulin dosage decreased accordingly. At least 100 grams of sugar are given in divided doses during the first and subsequent 24-hour periods in the form of orange juice or gingerale or intravenous glucose. Soft diet is substituted when the patient can eat, and soon he is returned to his regular diet. After a coma the patient should be kept in bed for a week or two.

SURGERY

If a diabetic requires surgery it is to his advantage, if the operation is an elective one, to have his diabetes well controlled before surgery. If it is an emergency his diabetes can be controlled by frequent urinalyses as described above, with a glucose intake of at least 100 grams daily in divided doses covered by the required amounts of insulin. It is preferable not to use ether, as it depletes the glycogen content of the liver and increases the blood sugar level. It should be remembered that acidosis may simulate an acute appendix with abdominal pain, nausea and vomiting and leucocytosis. In any even, it is well to control acidosis in a patent about to have surgery, in order to allow for a more normal risk.

Diabetics who become ill and cannot eat should follow a liquid diet of orange juice and milk so that their carbohydrate intake is assured. They should be particularly careful about having their urinalyses made during these periods so that the insulin intake can be adjusted accordingly.

The pregnant mother is handled in the same way as a normal person. The new-born infant is generally hypoglycemic, and in addition to giving it injections of glucose for the first few days a short birth should be provided so that glucose therapy will not be delayed.

The elderly diabetic patient should be instructed in the care of the feet. Uncontrolled diabetics develop arteriosclerosis prematurely. Generally the feet are relatively insensitive and with a poor blood supply. Healing of injuries or infections in these extremities is difficult and often a serious matter. Gangrene of the foot is one of the commonest complications of diabetes due to the arteriosclerotic factor. Peripheral neuritis is not uncommon and may be largely due to vitamin B deficiency.

SUMMARY

The important points in the handling of a proven case of diabetes are:

1. To have some standard adequate diet to which the patient adheres.

2. To have a simple record of the content of sugar in the urine.

3. The glycosuria should be controlled by carefully adjusting the dosage of one twpe of insulin or another when necessary. This adjustment is particularly essential in periods of illness and shock. It is most important to recognize acidosis and coma, and treat the case vigorously.

4. The care of the feet is especially important in elderly diabetics as foot trouble is a major complication.

3616 Main St.

Rehabilitation of Congenital Spastic Paralysis

(Little's Disease)

WILFRED C. CURPHEY, M.D.
Las Vegas, N. Mex.

CONGENITAL spastic paralysis or cerebral birth injuries may be defined in the words of Pusitz as essentially an upper motor neuron lesion due to disease or injury affecting the cerebral motor centers; as a result, there is a loss of cerebral inhibition. In other words, there is no true paralysis of the muscle, but a lack of control of muscle power and complete loss of timing in muscle function or co-ordination, resulting in a spastic, tense inability to move the extremities. An exact definition of the term "birth injury" would strictly imply only an obstetrical injury, but the late results of many types of disturbances to the child during the last month of pregnancy and during the first two or three weeks of life are, in many instances, identical with actual obstetrical damage.

Phelps classified the types of paralysis under five headings:

1—True Spasticity
2—Athetosis
3—Overflow or Synkinaesia
4—Incoordination or Ataxia
5—Tremor

True spasticity itself represents a hyperirritability of muscle to any stimulus; for instance, tapping on the patellar tendon produces a markedly increased contraction of the quadriceps; in fact, any stimulus will likewise produce this contraction. Sudden noises cause sudden response, or any local disturbance of the muscle such as rubbing, striking or stretching is also a distinct stimulus to contraction. This is particularly seen in attempts at passive motion, resulting in a definite resistance on the part of the muscle to pull. In this way the typical disturbance in the spastic individual is explained.

Athetosis consists of an involuntary, more or less constant contraction of successive muscles without regard to function in antagonistic or reciprocal groups. This disturbance results from damage to the basal nuclei, which will be discussed in pathology later. Many times slow motion pictures are needed to distinguish the athetoid group from simple forms of incoordination.

Overflowing or synkinaesia is merely involuntary motion resulting from voluntary attempts at motion. This is seen normally many times in individuals attempting intricate motions associated protrusion of the tongue or movements of the face. In spastic individuals the overflow or dyskinaesia becomes very severe, and intensive facial overflow often causes the patient to appear feeble-minded because of grimaces on attempts to walk or use the arms.

Incoordination or ataxia must be distinguished from athetosis and overflow, and results from a variety of causes such as loss of muscle sense, loss of the sense of equilibrium, loss of sense of posi-

Read before the New Mexico Public Health Association, Santa Fe, New Mexico, October, 1939.

tion, and sometimes interference with muscle balance of peripheral nerve or muscle origin.

Tremors may be described as either fine or coarse, and are both intentional and non-intentional. There is very seldom any confusion regarding this disturbance except in cases of very coarse intention tremor where the condition suggests an incoordination. It can be distinguished, however, by its rhythmical and recurrent nature.

In classifying this group of patients according to the pathology existing, they may be listed under three heads, namely: (1) Developmental, in which there is not only lack of development of the cortical regions, but perhaps of the brain as a whole, since these cases do not have good intelligence. These individuals are not worth while training since there is nothing that can be trained. It is very difficult to distinguish these cases from others during the first two or three years of life since many of the actions of an infant are purely automatic, as will be pointed out later. (2) If pure type reactions only are considered, the other two fall into the classification of cortical involvement or basal ganglion involvement; the cortical type results in typical spasticity, and the type which has as its basic pathology injury to the basal nuclei results in athetosis, tremor and incoordination. It is important to distinguish these two groups since the true spastic type has a very excellent prognosis and the pure athetosis type has a very poor prognosis. (3) In addition to these, the post-encephalitic syndrome may also be considered as a cause of spastic paralysis. In these there may be a preponderance of spasticity or athetosis; usually, however, there is a combination of both.

INCIDENCE

Regarding the incidence of spasticity, it has been pointed out that there are probably 40 or 50 spastics in every 100,000 of the population, and, unlike infantile paralysis, the spastic disease is unfortunately distributed throughout the population without a great deal of respect for class or location. There has never been any true estimate of spasticity in any community in this country.

The prevalent opinion is that these cases are not frequent. As a matter of fact, it is the opinion of Pusitz that the figures in some instances even exceed those for infantile paralysis, but in all instances the figures are not far behind those of infantile paralysis. This is true in spite of the fact that many cases of spastic paralysis are never investigated, while those of infantile paralysis are. The probable reason for the lack of appreciation of these high figures for the incidence of spastic paralysis is due to the fact that the patient is kept in the background more than any other orthopedic case. The social worker feels that these cases are for the neurosurgeon or the mental institution; crippled children commissions are not so anxious to accept these cases because of the lack of uniform thought not only among the medical profession as a whole but even among orthopedic surgeons; also there is the fact that these cases are labelled as idiots. In other words, the medical profession has been influenced by the first description of spastic paralysis of Dr. Little in 1861, and has respected his statement regarding this disease, which he calls spastic palsy with mental deficiency; as a result, the rich send these children to special schools, the poor allow them to go to institutions for the feeble-minded. If one includes them, in addition to cerebral birth injuries, hemiplegias, etc., in adults and also cases of encephalitis one has a much larger field for rehabilitation than ever in infantile paralysis. Of course, this immediately raises the question regarding what rehabilitation may be accomplished. It has been estimated that 70% are trainable; in other words, improvable; 7 or 8% can be benefitted by surgery, and 20% can be rehabilitated to a normal place in the world; none, of course, are completely curable.

MENTAL ABILITY

Regarding the mentality of spastic cases, the importance of the correct psychological approach cannot be overestimated. It can be definitely assumed that less than 25% of spastic individuals are mentally deficient. It has also been pointed out by Pusitz and Phelps that in the light of our present knowledge of psychiatry we are unable to apply the usual accepted methods of examination for mental deficiency. This is true because the spastic many times is completely unable to communicate, is completely unable to control his actions, and is therefore very difficult to really observe what his mental function is. It has become apparent in recent years, in the experience of those who have definitely attempted to treat such cases that after a prolonged period of observation and effort, very few are found to be truly idiots. Mills reports that in treating 200 or more severe forms that he could classify only five as being idiots. Pusitz estimates that fully 25 to 50% come up to average intelligence, 5 to 10% are abnormally bright since they have to develop their faculties to a much higher degree in order to meet competition, and about 10% or less are idiots or morons. Considering the cross-section of the population it will be seen that this is the usual run of intelligence quotia in all people. However, there is the true spastic personality to deal with. This is not because of low intelligence, but is due to the environment of individual patients. Many are not given a proper chance to express themselves. From the very beginning they suddenly come to the realization that they are individuals distinct and different from the rest. Such a condition often arises because of the spastic's inability to communicate; therefore, the parents and other members of the family, believing that he is feeble-minded, never include him in conversation or other activities of the family, usually treating him as one completely lacking in personality. As a result of this, the spastic becomes either resentful or he is stimulated to make abnormal although futile efforts to take his rightful place in the family circle. In addition to this, there is a tendency on the part of a great many of them to excuse ab-

normal actions or wrongdoings, if they are capable of accomplishing such acts, onto the results of their infirmities. If we consider then that we have a large group of such individuals, probably as many or more than the number of infantile paralysis cases, it seems to be worth while to make some efffort to rehabilitate them. Obviously when one observes the spastic both as one with physical defects as well as with mental maladjustment, the treatment of such cases must therefore involve their entire spastic personality. For many years the orthopedic surgeon has been satisfied to correct gross deformities and complete failure. For this reason it has been found that the treatment of spastic disease involves the problem of teaching and muscle training; in other words, physiotherapy, the first principle of which is to first teach the spastic the necessary physiological functions, since many of these individuals are unable to sleep, unable to eat and are unable to control either the bladder or the bowels; in other words, many spastic children are completely helpless and are the most extensive type of burden on their families.

TREATMENT

Regarding the method of procedure to be adopted in the treatment of such cases, first it is necessary to hospitalize the patient for thorough examination and the evaluation of the various deformities which may have developed as a result of improper muscle balance. It is important to remember that the all-important method of treatment is physiotherapy, which consists of muscle training, teaching the patient various methods of controlling the muscle function as well as teaching what equilibrium is and how to adjust himself to the difficulties of maintaining normal equilibrium. In any event, the first principle of treatment is based on the actual difficulty found in the examination. In the spastic the hyperirritability of muscles, resulting in almost simultaneous contraction of antagonists, is the important factor. Thus, voluntary relaxation is one of the first aims. In the athetoid, voluntary relaxation is desirable in order to produce volitional motions later, uncomplicated by athetoid movements. In pure incoordination, the principle of relaxation is less important, as is the case with tremors. The ability to relax is important to normal individuals; it relieves tension, mental and physical, and is essential in skilled activities. In the birth-injured, its importance is very great, and it can be taught successfully if cooperation can be obtained. In babies and youngsters, relaxation is more normal and is taught to be maintained in the face of more and more disturbing factors. In older people, of course, it can be taught more directly. This part of the treatment should precede all other forms and should last until relaxation can be instituted at will and maintained for a long time. Aids to relaxation, such as sedatives, warm baths, etc., should be used with caution as there is a great danger of making the patient dependent upon these aids and being unable to relax without them. In patients who cannot stand, sit or balance, and who have difficulty in holding up the head, general training must be started on the neck and trunk. The work on the extremities, most of which is done lying down, can be done simultaneously with the strengthening of the neck and trunk.

Treatment on the extremities should always begin with the proximal joints. A highly trained hand or foot is of no use if there is dyskinaesia in the shoulder or hip. The work is therefore started in these joints and extended gradually to the more distal parts. Often a year or more is needed in the hip and shoulder alone and at the end of this time very little improvement will be actually apparent. This must be stressed in the treatment, especially to the relatives, since the length of treatment is, of course, great, 5 years usually being the minimum.

In spasticity the previous training in relaxation is basic; then, while in as complete relaxation as possible, reciprocal motion may be attempted. These motions should be of very small amplitude and carried out very slowly in order not to disturb relaxation or produce reflex spasm. The motions should at all times be balanced in amplitude, speed and rhythm. Finally, active reciprocal motion may be begun by the patient himself, when it has been demonstrated that it can be done without spasms. Gradually the amplitude of motion can be increased and gradually the speed increased.

In athetosis the essentials are somewhat different. Here the athetoid movements underlie essentially normal reciprocation. If the athetosis is pure, the training in reciprocation can proceed more rapidly, but the preliminary training in relaxation will be found to take a much longer time. The amplitude of the motions can be increased more rapidly than in the spastic and the rhythm must be very regular.

In incoordination of the pure type the training in reciprocation resembles the training for any skilled activity. In overflow or synkinaesia the work is again different. Here the passive reciprocal motion will be easy, as the overflow only results from attempt at active motion. The treatment, therefore, will emphasize the stage of active assisted motion and this phase will be the longest. Here the amplitude and speed must be extremely slow, as any attempt to hurry will produce a recurrence of the difficulty.

In tremors there is very little to be accomplished when they are of the non-intention type, but in the intention tremor reciprocal exercise is often very effective. It should be emphasized here that these conditions represent static lesions, progressive ones having been eliminated, and that the attempts at controlling intention tremor are thus more successful.

The conditions described seldom occur in pure form, but one or another predominates in a given case. The reciprocal motion must be given according to the indications of all of the conditions found in the individual under treatment. Thus an athetoid patient with overflow will necessitate

taking both of these conditions into consideration. Any element of spasticity seen in any othewise athetoid patient must also be given special attention according to the principles of the treatment of spasticity.

Regarding the indications for surgery, such procedures should never be considered immediate. A period of training is often productive of surprising results, making certain operative procedures unnecessary. In any case, the procedures should be used only as incidents in and aids to the training program. Tenotomies are usually unnecessary, as the results are irreparable; however, they can occasionally be used to reduce total power where one of a group is tenotomized. For example, the adductor longus, when tenotomized alone, leaves the pectineus, adductor brevis and adductor magnus to perform the motion. Better balance may be obtained in this way. Tendon lengthening is not usually necessary or advisable, as the muscle will sooner or later contract and produce the same deformity; however, it cannot be said that it should not be used. Tendon or muscle stripping operations are used essentially to give better contractile leverage.

Novocain injections of nerve trunks are used occasionally to determine the effect of throwing them temporarily out of function. There may be doubt about the advisability of alcohol injections or Stoffel operations. A preliminary novocain injection of the nerves may be of great help in this determination. Alcohol injections will throw a muscle out of function for a period of months by the paralysis of its motor nerves. This may be desirable in order to facilitate a period of training, so that when power returns to the paralyzed group a balance may be effected. Stoffel operations are valuable aids to the treatment. These procedures cannot be expected to effect a cure, but in carefully selected cases will enable a balance of power to be brought about which results in a greater ease of training. The most common nerves used in this procedure are the branches of the obturator and the internal or external popliteal. Tendon transplantations may very occasionally help in improving balance. It may be seen, therefore, that the treatment described is not easy and that it covers a long period of time. It requires the careful study of the individual from all standpoints, mental, physical and social. All cases which are accepted for treatment require very constant care. The treatment must constitute a regular part of the daily routine and the average length of time is one hour a day; the rest of the day the condition should be forgotten. Great pains can be made only if these patients are institutionalized.

In summary we can say that there is a large group of people crippled because of cerebral birth injury or congenital spastic paralysis, that about 70% of these individuals can be improved, 20% of which can probably be completely rehabilitated. The period of treatment is of necessity very prolonged and it is becoming more and more apparent that it is worth while.

Mastoid Infections

W. E. VANDEVERE, M. D.
and
M. P. SPEARMAN, M. D.
El Paso, Texas

MASTOID infections are practically always secondary to infections of the middle ear, which in turn are secondary to upper respiratory infections.

Children, because of the presence of tonsils and adenoids, are predisposed to middle ear abscesses and thus to mastoiditis. Scarlet fever before the advent of sulfanilamide frequently resulted in an infection of the mastoid antrum or bone.

Whether in a child or adult when we have an acute rhinitis we should use one of the ephedrin preparations to promote ventilation and drainage of the sinuses and middle ear. When there is a pharyngitis or involvement of the middle ears we use sulfanilamide routinely, regardless of the type of infection present. This line of treatment has markedly decreased the number of operations for acute mastoiditis.

If in spite of treatments or if the patient is not seen until there is a middle ear infection, we have found the use of auralgin drops quite effective. However, if pain persists, and there is bulging of the ear drum a free tympanotomy should be done, without delay, so as to relieve pain, reduce temperature, decrease danger of mastoid infection and promote more rapid healing of the ear drum than if it ruptured due to necrosis.

In adults and very young children we use local anesthesia in doing a tympanotomy, while with the others we use ethyl chloride as a general anesthetic.

TYPES OF MASTOIDITIS

Mastoid infections are divided broadly into the acute and chronic types and each requires a different method of treatment.

We shall first discuss the acute infection, and cardinal symptoms of which are pain and tenderness on pressure over the mastoid bone, and swelling and sagging of the posterior superior canal wall. Less to be relied upon is fever, discharge, and x-ray pictures.

There may be no fever, the discharge may be profuse or suddenly cease entirely and an x-ray

(Continued on page 102)

Read before Reeves-Ward-Winkler Counties Medical Society, May 2, 1939.

SOUTHWESTERN MEDICINE

Vol. XXIV MARCH, 1940 No. 3

OFFICIAL JOURNAL
Arizona State Medical Association
New Mexico Medical Society
Southwestern Medical Association
El Paso County (Texas) Medical Society

EDITOR
M. P. Spearman, M. D.
1001 First National Bank Bldg.
El Paso, Texas

ASSOCIATE EDITORS
L. B. Cohenour, M. D. Albuquerque, New Mexico
Orville Egbert, M. D. El Paso, Texas
Preston T. Brown, M. D. Phoenix, Arizona
Wm. John Pangman, M. D. El Paso, Texas

Two dollars per year 25c single copy

Entered at the postoffice at Phoenix, Arizona, as second-class matter.
Acceptance for mailing at special rate of postage provided for in section 1103, Act of October 3, 1917, authorized March 1, 1921.

ADVERTISING OFFICES
A. C. Taylor Printing Company
142 South Central Avenue
Phoenix, Arizona

SUBSCRIPTION OFFICES
D. F. Harbridge, M. D.
822 Professional Building
Phoenix, Arizona

Eastern Representative:
Cooperative Medical Advertising Bureau
535 N. Dearborn St., Chicago

CANCER CONTROL

Undoubtedly public education has helped the physician tremendously in his battle to control cancer. Lay organizations, supported by widely gathered funds, are doing a splendid piece of work in the mission field of spreading knowledge. The American Society for The Control of Cancer has this to say:

"Second only to heart trouble as a killer and most feared of all causes of death, cancer is in its early stages one of the most curable of serious diseases. Its definite diagnosis requires the services of a highly trained pathologist, but early symptoms which may mean the disease is present are easily recognized by any alert individual. Once cancer is diagnosed the preferred treatment is by a group of specialists and yet the key man in the whole picture of cancer control is the general practitioner to whom patients come for periodic examinations or for advice about apparently harmless conditions. While late cancer causes considerable suffering, in the early stages it is nearly always painless.

It is fitting that this paradoxical disease should be fought by an Army, not chiefly of men but of women, an Army not of destruction but of education, and its war should be a war to save life. Four years ago a small group of physicians, research workers, and club women launched the Women's Field Army of the American Society for the Control of Cancer. Its goal was to reduce cancer mortality and to arouse the interest of men and women everywhere in this disease and the methods and facilities available in their communities for treating and controlling it. Between one-third and one-half of those who now die could and should be saved by early diagnosis and prompt treatment, declared the American Society for the Control of Cancer.

The growth of the Women's Field Army has been rapid. Divisions are now underway in forty-six states, Cancer information centers—local units of the Army—have been established in more than half the counties of the country. Cancer control is receiving more attention than ever before.

A beginning has been made, but only a beginning in this peacetime war. Approximately 150,000 men, women and children were destroyed by cancer in 1939. The needs in the field are great: more clinics, more funds for research, more facilities for indigent patients, above all, more education for the general public.

Working under the supervision of physicians and other experts, women are the leaders and organizers of the fight against cancer. However, the most paradoxical thing about this complex disease is that we cannot leave its control to leaders, to research workers, or medical men. We must all do our bit.

The Field Army suggests three measures that each one may adopt and so play a part in cancer control:

1. Have a comprehensive physical examination once a year, however well one feels. Women over thirty-five years of age should have what the American Society calls the B. P. Examination, covering the Breast and Pelvic areas, semi-annually.

2. Memorize the cancer danger signals, early and usually painless symptoms that may mean the disease is present and should always mean a visit to a physician. They are: any persistent lump or thickening, particularly in the breast; any irregular bleeding or discharge from any body opening; any persistent and unexplained indigestion; any sore that does not heal normally, especially about the tongue, mouth or lips; any sudden change in the form or rate of growth of a mole or wart.

3. Enlist in the Women's Field Army in April, set aside by Special Act of Congress as Cancer Control Month, and so help the Army carry on its work of education to save lives."

ARIZONA ANNUAL SESSION

Elsewhere in this issue will be found the program of the annual session of the Arizona State Medical Association to be held in Tucson, April 18, 19, 20. Headquarters will be the Santa Rita Hotel, host to the 1938 session.

A number of nationally known guest teachers are to appear. Among them are:

1. Edward Lee Dorsett, M. D., Assistant Professor of Obstetrics and Gynecology, St. Louis University School of Medicine, St. Louis, Mo.

2. Thomas J. Harris, M. D., American Board of Otolaryngology, New York City, New York.

3. John Shelton Horsley, M. D., Surgery, Richmond, Virginia.

4. S. D. Ingham, M. D., Neurology and Psychiatry, Los Angeles, California.

5. Hans Lisser, M. D., Clinical Professor of Medicine, University of California, San Francisco, California.

6. Chas. F. McKhann, M. D., Assistant Professor of Pediatrics and Communicable Diseases, Harvard Medical School, Boston, Mass.

7. Wm. S. Middleton, M. D., Dean and Professor of Medicine, University of Wisconsin Medical School, Madison, Wis.

Several Arizona physicians will present papers to the society. Some of the in-state talent:

1. John E. Bacon, M. D., Miami, Arizona.
2. Thomas H. Bate, M. D., Phoenix, Arizona.
3. E. Payne Palmer, M. D., Phoenix, Arizona.
4. H. G. Williams, M. D., Phoenix, Arizona.

The Program Committee, headed by Dr. D. F. Harbridge, chairman, thus offers the membership one of the best-balanced agenda ever presented the Arizona Association. The quality and the quantity of the teaching at the annual sessions are showing remarkable advances from year to year. Attendance at these meetings affords one the chance to acquire new knowledge almost painlessly.

As usual, certain entertainment features are planned for the hours after study. There is to be a banquet, public meeting. Each day round table luncheons will be held. The visiting members of the Auxiliary are to be entertained in various ways, so that the physician's wife who needs a vacation may surely find surcease during the 3 days of the session.

The annual business meeting of the House of Delegates will take up during this session. Dr. Chas. Smith of Nogales, president of the Association, will be succeeded by Dr. O. F. Harbridge of Phoenix, president-elect.

Any physician who fails to attend this year's session is due to experience a distinct loss. For a very small sum, and 3 days of his time, the practitioner is herein offered a valuable short postgraduate course. It will be costly to miss it.

THE "THROW-AWAY" PROBLEM

For a long time editors of the state medical journals, in company with the editors of the approved journals of national circulation, have concerned themselves with the problem of the "throw-away" publication. What merit these numerous desk-clutterers possess stems from their practice of lifting and abstracting original articles from the legitimate medical press. In the guise of scientific journals they often wax fat and prosperous from their scavenging habit of publishing dubious advertising that has been refused by legitimate journals, thus giving birth and continued life in print to some of the worst fakes and quackeries now known to exist in the dark alleys of medicine. Much study of this disease of medical journalism has not yet brought to light an adequate remedy. In continuance of the search the editor of the JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY has this to say in the March issue:

"One of the annoyances of legitimate medical publications is the 'throw-away' digests, the editors of which cull over the various state and national journals and print condensations of some of their articles as a means to attract all types of advertising.

While our material is copyrighted still this is not a sufficient protection against rewording and printing the articles. This JOURNAL is offering a plan to the other journals, which have been the victims of this practice and if successful, we will devote a few pages every month to condensed prominent articles from other state and national journals. This is in line with the policy of THE JOURNAL OF THE MICHIGAN STATE MEDICAL SOCIETY to provide an instructive readable magazine of practical value. Suggestions from any reader of ways to improve the JOURNAL along these lines will be gratefully received."

It is gratifying to note that SOUTHWESTERN MEDICINE has for the past 2 years been well aware of the value of a department of abstracts. In 1938 this journal abstracted and published 44 articles and editorials from other state journals. Because this Miscellany feature proved to be highly popular with our readers, the editorial staff abstracted, published 94 such condensations in 1939. Thus SOUTHWESTERN MEDICINE has amply demonstrated the increasing value of such a plan to its readers.

MEDICAL REFUGEES

Increasing interest is attached to the problem of the emigre physician in America. Following the rise of Hitler to power, large numbers of middle European physicians fled to this country. Many of these men had attained eminence in their home land. Many were Jews, and that fact seems to be the basis of much angry argument today over the problem of what to do with them in their newly adopted land.

We have been led to infer that too many physicians are being graduated in our country today, yet, sponsored by the same source there now appear strong appeals to admit large numbers of foreigners to practice in America.

The entire question needs to be studied apart from the consideration of religious affiliations of the persons involved. Some states have sincerely attempted to do so, yet their conclusions and resulting laws are made the target for the age-old cry of anti-Semitism! No good can come to the American public, America's physicians or the emigres from loud, angry prejudice or false charges broadcast like the storied arrow; you'll recall that "it fell to earth—I know not where."

Special Section

Arizona State Medical Association

PRESTON T. BROWN, M. D., *Associate Editor*
403 Professional Bldg., Phoenix, Arizona

NECROLOGY

WILLIAM O. SWEEK, M. D.

After a year of failing health, which forced his retirement from active practice last June, Dr. William O. Sweek, prominent physician and surgeon of Phoenix, Arizona, passed away at his home on March 3, 1940.

Dr. Sweek maintained numerous medical and surgical affiliations including membership in the local county and state medical associations, the American Medical Association, the American College of Surgeons, the Southwestern Medical Association, and the Pacific Association of Railroad Surgeons. He was also a member of the Medical Editors and Authors Association as he prepared many papers treating with his studies and research especially in the field of gall bladder treatment and surgery in which he was especially interested.

Dr. Sweek, during his full and active career, civic as well as professional, served a term on the Board of Regents for the Arizona State University, and was Secretary of the State Board of Medical Examiners for several terms. He was a 32nd Degree Mason and held various other affiliations with that Order. He served over-seas with the United States Army Medical Corps and was prominently identified with Legion work, having served as Commander of the Frank Luke, Jr. Legion Post, now the Luke-Greenway Post.

Missouri born, Dr. Sweek was graduated in medicine from the St. Louis University School of Medicine in 1912. He had practiced in Phoenix for 24 years, being co-director with William C. Grunow of the Lois Grunow Memorial Clinic since 1931. Dr. Sweek also served as assistant surgeon of the United States Public Health Service, but devoted his time since the founding of the Grunow Clinic to the work of that noted institution.

Surviving are his wife and one daughter, in addition to one brother and two sisters. A host of friends and associates mourn the passing of this eminent physician and surgeon, his services on March 6th being attended by those from all walks of life, many having come from distant points to pay their final respects and tribute.

CONFERENCE OF PRESIDENTS AND SECRETARIES

A Conference of the Presidents and Secretaries of the component county societies was held, at the call of Dr. Chas. S. Smith, President of the Arizona State Medical Association, at Phoenix on March 17th. Representatives of all societies were present except from two counties.

At the conclusion of the Conference of Presidents and Secretaries, it was voted to hold such a conference annually during the month of February, with Phoenix as the meeting point. A permanent organization will be worked out at the next session to give this group a business aspect for certain important activities not allocated to other branches of the Association.

Preceding the Conference, a Dutch Treat Scientific Dinner was held on Saturday evening, March 16th, the Maricopa County Medical Society acting as host for the Dinner, and the Committee on Scientific Education and Postgraduate Activities presenting the scientific program. Dr. E. R. Charvox, President of Maricopa Society, presided at the dinner, with Dr. F. W. Butler, Chairman of the Committee on Scientific Education, presiding over the scientific program. Two papers were presented:

Prostatectomy by Transurethral Resection—
Dr. W. G. Shultz, Tucson

Coccidioides Infection of the Lung—
Dr. O. J. Farness, Tucson

A floor show was presented as an entertainment feature.

ARIZONA STATE MEDICAL ASSOCIATION

Tucson
April 18-19-20

■

NEW MEXICO MEDICAL SOCIETY

Albuquerque
May 27-28-29

The President's Page

ON other pages of this issue you will find the Scientific Program for the forthcoming Annual Meeting of our Association. I wish to call your attention to the array of outstanding speakers scheduled to address this Meeting, and to urge a full attendance from our membership. The guest speakers have been invited to address the General Sessions for two consecutive days, which will make it possible for each of you to hear these men on several important subjects, hence you are urged to make every possible effort to attend the three days of addresses.

Arizona, as we all know, is remote from the medical seats and centers of learning. For this reason the Committee on Scientific Assembly have brought in men noted in their various fields of practice and arranged round-table and discussion periods of sufficient length to give postgraduate aspects to the addresses presented. You have only to look at the list of the speakers and their subjects to see what a feast is in store for those who will attend.

Of interest is the public meeting to be addressed by Dr. Charles A. Dukes, President of the California State Medical Association, and prominently identified nationally with the work of organized medicine. Dr. Dukes will present the various important aspects of organized medicine to clarify presentations that appear in the press. Our membership should turn out enmasse for Dr. Dukes' public address as he is an outstanding speaker and will have a message of real importance for the profession as well as for the public.

By recommendation of the Conference of Presidents and Secretaries and vote of the Council, the business meetings of the Council and the House will be held the day prior to the Annual Meeting in order to leave the three days of scientific procedures uninterrupted by business sessions. This adds to the postgraduate features of the Meeting.

REMEMBER:

The Annual Meeting, April 18, 19, 20, 1940
Tucson, Airzona

Chas. S. Smith M.D.

CHAS. S. SMITH, M. D., President.

MASTOID INFECTIONS

(Continued from page 97)

picture will always show a cloudiness in every middle ear infection; and may indicate nothing more than a congestion of the mucous membrane lining the mastoid cells.

Not to be forgotten is the so-called silent mastoid infection, generally caused by the streptococcus mucosus, in which there are no symptoms referable to the ear or mastoid. This condition is found by an exploratory operation after all other possible causes of fever or diarrhoea in an infant have been investigated.

TREATMENT

When we have a definite mastoid infection we should not be in great haste to operate, because many cases will get well if adequate drainage is maintained and sulfanilamide or sulfapyradine therapy established. Unless the symptoms are urgent we like to wait at least two weeks before operating so as to allow the process to become walled off and a certain amount of tissue immunity established.

For the acute mastoid infection a simple mastoid operation is always done. This consists of removing the cortex of the mastoid bone, cleaning out the necrotic bone, locating the additus to the middle ear and placing a drainage tube in same. The wound is closed with the exception of the lower end through which the drainage tube is placed.

A simple mastoid operation is easily done in an adult under local anaesthesia and this method should be used if for any reason a general anesthetic is contra indicated.

Some of the more serious complications of acute mastoiditis are lateral sinus thrombosis and meningitis. Within the last few months we have had one of each and fortunately both got well. The case of streptococcic meningitis was reoperated and the dura exposed for drainage, daily spinal fluid taps were made and sulfanilamide administered. Before the advent of sulfanilamide none of these cases recovered but now many such cases are reported. Our case of lateral sinus thrombosis recovered after resection of the internal jugular vein and opening the lateral sinus.

When we have a discharging ear of long standing, and especially if the discharge remains foul after careful local treatment, we can be fairly certain that we have necrosis of the mastoid bone, and a radical or modified radical operation should be done. Perhaps the term "complete mastoid" operation would be a better term.

When, in a chronically discharging ear, we see a perforation in the posterior-superor quadrant of the tympanic membrane, it is generally an indication to operate, because it is through this type of perforation that the epidermis grows and piles itself layer on layer into the mastoid space. This ball of epidermis is called a cholesteatoma and pressure necrosis dissolves away the adjacent bone until often the brain is exposed over a wide area.

In a chronic mastoid infection the onset of severe headache, nausea, vomiting, vertigo, nystagmus or a Bell's palsy, demand immediate operation unless such symptoms can be proved to be due to some other cause. Operation in case of chronic mastoid infection is done with two objects in view: first of all to prevent serious intracranial complications and second to stop the discharge from the ear.

The radical mastoid operation is done exactly as the simple operation except that the posterior bony canal wall is removed and the posterior membranous canal is split in such a manner that it can be laid back into the mastoid cavity and held in place with gauze packing. The ear drum, if any remains from the disease process, is removed in this operation as well as the hammer and anvil and thus the middle ear and mastoid space is in wide open communication with the canal and can easily drain or be treated through this approach.

In children or individuals where most of the drum remains intact, we often save these structures by doing a modified radical operation. In this operation the posterior bony canal wall is lowered to the drum and the mastoid cavity is made to communicate with the external auditory canal anterior to the drum. In a carefully performed radical mastoid operation we can expect cessation of discharge in 75% of cases and removal of danger of intracranial complications in 100% of cases.

Mastoid operations both simple and radical are not as dangerous or difficult as generally believed to be. In checking over our operations during the past 15 years we find a mortality of less than 3%.

1001 First National Bank Bldg.

COMMUNICATIONS

Sir:

The American Public Health Association has recently adopted a Report on the Educational Qualifications of Health Officers. The Report is distributed free in the belief that it will serve a useful purpose in raising the educational standards of professional public health personnel. Copies may be secured from the American Public Health Association, 50 West 50th Street, New York, N. Y.

Your cooperation will be greatly appreciated.

Very sincerely yours,
Reginald M. Atwater, M. D.
Executive Secretary.

February 7, 1940.

Sir:

A Pan-American Congress of Ophthalmology will be held in the city of Cleveland Ohio, on October 11 and 12, 1940. All ophthalmologists of the West-

ern Hemisphere are invited to attend. Until such time as the Pan-American Congress can elect its own officers, the American Academy of Ophthalmology and Otolaryngology has volunteered to undertake arrangements, after which the meeting and the future of the Congress will be placed in the hands of its elected officers.

Inasmuch as there is no complete list of ophthalmologists of the Western Hemisphere, it is requested that you notify all members of your society of the proposed Congress and invite them to attend.

Committee of the Pan-American Congress
of Ophthalmology.
M. E. Alvaro
Conrad Berens
Harry S. Gradle.

Sir:

I am enclosing to you a notice of the Prize Award Contest of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons Foundation, Incorporated.

I will appreciate it greatly if you will publish a notice of this in the first available issue of your Journal, in order that those who may desire to submit theses may have ample time for preparation.

With my kind regards, I am,

Sincerely and fraternally yours,

Jas. R. Bloss,
Secretary.

Ed.—The rules follow:

1. "The award which shall be known as 'The Foundation Prize' shall consist of $150.00."

2. "Eligible contestants shall include only (a) interns, residents, or graduate students in Obstetrics, Gynecology or Abdominal Surgery, and (b) physicians (with an M. D. degree) who are actively practicing or teaching Obstetrics, Gynecology or Abdominal surgery."

3. "Manuscripts must be presented under a nom-de-plume, which shall in no way indicate the author's identity, to the Secretary of the Association together with a sealed envelope bearing the nom-de-plume and containing a card showing the name and address of the contestant."

4. "Manuscripts must be limited to 5000 words, and must be typewritten in double-spacing on one side of the sheet. Ample margins should be provided. Illustrations should be limited to such as are required for a clear exposition of the thesis." Submit 3 copies of Thesis and illustrations to Secretary.

5. "The successful thesis shall become the property of the Association, but this provision shall in no way interfere with publication of the communication in the Journal of the Author's choice. Unsuccessful contributions will be returned promptly to their authors."

6. "All manuscripts entered in a given year must be in the hands of the Secretary before June 1st."

7. "The award will be made at the Annual Meetings of the Association, at which time the successful contestant must appear in person to present his contribution as a part of the regular scientific program, in conformity with the rules of the Association. The successful contestant must meet all expenses incident to this presentation."

8. "The President of the Association shall annually appoint a Committee on Award, which, under its own regulations shall determine the successful contestant and shall inform the Secretary of his name and address at least two weeks before the annual meeting."

NEWS

General

Chairman Norman H. Davis of the American Red Cross announced that at the request of the Surgeon General of the Army, the Red Cross has undertaken the enrollment of various types of medical technologists who are willing to serve in the medical departments of the Army and Navy if and when their services are required at the time of a national emergency.

The enrollment now being inaugurated will be similar to that of the nurses reserve which the Red Cross has maintained for the Army and Navy since 1911, and which is now being expanded to include properly qualified male nurses, and also the reserve of dietitians which has been maintained since 1917.

Persons with the following qualifications will be included:

Chemical Laboratory Technicians (male)
Dental Hygienists (male and female)
Dental Mechanics (male)
Dietitians (male and female)
Laboratory Technicians (male and female)
Meat and Dairy Hygienists (Inspectors) (male)
Nurses (male)
Occupational Therapy Aides (male and female)
Orthopedic Mechanics (male)
Pharmacists (male and female)
Physical Therapy Technicians (Aides) (male and female)
Statistical Clerks (male and female)
X-ray Technicians (male and female)

The Red Cross will work through the various associations and agencies of which these technologists are members, giving to them the details of the plan, including requirements prescribed for enrollment.

In the event of national emergency, the enrolled male technologists who meet the required physical standards will be eligible for enlistment in the Army as non-commissioned officers and in the Naval Reserve as petty officers. Women technologists and men who do not qualify physically, will be eligible for employment by the Army as civilians. Women technologists are not eligible for service in the Navy.

The Navy has indicated that notwithstanding the enrollment with the Red Cross of male technologists eligible for enlistment in the Naval Reserve in emergency, it is desired that in peace-time qualified personnel actually enlist in the U. S. Naval Reserve. The Navy does not require dietitians, occupational therapy aides, orthopedic mechanics or meat and dairy hygienists (inspectors), but all other technologists who may be interested in enlistment in the Naval Reserve are encouraged to communicate with their Naval District Com-

mandant from whom they may obtain full information.

Medical technologists belonging to the groups listed above who are interested, are urged to write National Headquarters, American Red Cross, Washington, D. C., for full information.

The United States Public Health Service has announced that thirteen hospitals would receive government-owned radium on a loan basis within the next few weeks. The radium, weighing about two grams, is valued at approximately $50,000. Two shipments will be made to Texas one for the El Paso City-County Hospital at El Paso, and the other for the Baylor University Hospital in Dallas.

Dr. Thomas Parran, Surgeon-General of the U. S. Public Health Service, in announcing these loans, stated that the grants were made in cooperation with state departments of health and state cancer commissions. They must also meet high standards regarding personnel administering the treatment. Hospitals receiving the radium must also agree to give preference to patients in the lowest income groups.

El Paso

The Texas State Department of Public Health and the Texas State Medical Association recently sponsored a Post-Graduate Refresher Course for the physicians of El Paso County and vicinity. Sessions were held at Hotel Cortez. The program was as follows.

MONDAY, FEBRUARY 26th

Mental Hygiene 2:00 to 3:30 P.M.	Pediatrics 3:30 to 5:00 P.M.
Mental Hygiene 8:00 to 9:00 P.M.	Pediatrics 9:00 to 10:00 P.M.
Dr. T. H. Cheavens, Dallas	Dr. F. H. Lancaster, Houston

TUESDAY, FEBRUARY 27th

LUNCHEON 12:15 to 2:00 P. M.

Pediatrics 2:30 to 3:30 P.M.	Mental Hygiene 3:30 to 4:30 P.M.
Pediatrics 8:00 to 9:00 P.M.	Mental Hygiene 9:00 to 10:00 P.M.

WEDNESDAY, FEBRUARY 28th

Syphilis 2:00 to 3:30 P. M.	Gonorrhea 3:30 to 5:00 P.M.
Gonorrhea 8:00 to 9:00 P.M.	Syphilis 9:00 to 10:00 P.M.
Dr. D. O. Poth	Dr. Nicholson

THURSDAY, FEBRUARY 29th

Syphilis 2:00 to 3:00 P.M.	Gonorrhea 3:30 to 5:00 P.M.
Gonorrhea 8:00 to 9:00 P.M.	Syphilis 9:00 to 10:00 P.M.

FRIDAY, MARCH 1st

Luncheon 12:15 to 2:00 P. M.

Obstetrics 2:30 to 3:30 P. M.	Tuberculosis 3:30 to 4:30 P. M.
Obstetrics 8:00 to 9:00 P. M.	Tuberculosis 9:00 to 10:00 P. M.
Dr. Roy L. Grogan	Dr. F. H. Carman

SATURDAY, MARCH 2nd

Obstetrics 2:00 to 3:30 P. M.	Tuberculosis 3:30 to 5:00 P. M.
Tuberculosis 8:00 to 9:00 P. M.	Obstetrics 9:00 to 10:00 P. M.

A regular meeting of the El Paso County Medical Society was held February 12, 1940, at 8:00 p.m. at Hotel Cortez. The program was as follows:

"Surgical Considerations of Abscesses of Liver"—Dr. L. Villareal. Discussion by Drs. J. A. Hardy, W. W. Waite and J. Murphy.

"Psychologic Aspects of Pediatrics"—Dr. I. M. Epstein. Discussion by Drs. P. McCheshney, J. A. Hardy and M. P. Spearman.

New members: Drs. Newton Walker, John Martin and Charles E. Webb.

A regular meeting of the El Paso County Medical Society was held February 26, 1940, at 8:00 p. m. at Hotel Cortez. The program scheduled for this meeting was turned over to the speakers who were sent out by the Post-Graduate Refresher Courses, sponsored by the Texas State Department of Public Health and the Texas State Medical Association. They were Dr. Frank Lancaster, who spoke on pediatrics, and Dr. T. H. Cheavens, who spoke on mental hygiene.

Dr. Raymond P. Hughes was granted the degree of Master of Science in Medicine by the University of Pennsylvania. His thesis concerned the use of sulfanilamide in dermatology.

A regular meeting of the City-County Hospital Staff was held Wednesday, February 21, 1940, at 6:30 p. m., at City-County Hospital. Drs. W. W. Waite and G. Werley presented cases of syphilitic aortitis.

The regular meeting of the Staff of the Hotel Dieu Sisters' Hospital was held Tuesday, February 6, 1940, at 12:10 o'clock in the auditorium of the Nurses' Home. Luncheon was served. The program was as follows:

"Death from Suspected Foreign Body of the Bronchus"—Dr. W. E. Vandevere. Discussion by Drs. J. T. Bennett and C. H. Mason.

"Pneumonia, Diagnosis and Treatment with Special Reference to Sulfapyridine"—Dr. C. E. Jumper, Dr. Chester Awe and Dr. J. Rogde.

At the recent convocation of the International College of Surgeons at Venice, Florida, Fellowships were conferred on Drs. Paul Gallagher and Felix Miller, of El Paso.

Drs. Louis Breck and M. P. Spearman recently addressed the Grant County (New Mexico) Medical Society on "Recent Advances in Orthopedic Surgery" and "Advances in Otolaryngology" respectively.

Dr. Vincent Ravel has recently been on active duty with the U. S. Navy at the Naval Air Base, Pensacola, Florida. Dr. Ravel holds a commission in the U. S. Naval Reserve in the grade of Lieutenant. j. g.

AUXILIARY NEWS

The regular meeting of the Woman's Auxiliary to the El Paso County Medical Society was held Monday, February 12, 1940 at the home of Mrs. Bloyce Britton. Mrs. Branch Craige, President, presided.

The report of the Nominating Committee was given and the following officers were nominated for the year 1940-41:

President-elect, Mrs. Henry T. Safford, Jr.

1st Vice-president, Mrs. A. P. Black.

2nd Vice-president, Mrs. Leslie Smith.
3rd Vice-president, Mrs. J. W. Cathcart.
Treasurer, Mrs. Jesson Stowe.
Recording Secretary, Mrs. Jacob Rogde.
Corresponding Secretary, Mrs. S. G. Von Almen.
Election will be held at the next meeting.

The recommendation was passed that the Budget Committee make the following donations:

1. $75.00 to the Baby Sanatorium at Cloudcroft, New Mexico.
2. $25.00 to the Student Loan Fund (for medical students).
3. $25.00 to the Memorial Loan Fund.

Mrs. Louis Breck then gave her talk, the subject being, "Recent Aspects of Socialized Medicine".

The meeting was adjourned and tea was served. The hostesses assisting Mrs. Britton were: Mesdames A. D. Long, C. H. Mason, T. J. McCamant, Paul E. McChesney, Irving McNeil, Felix Miller, J. D. Peticolas, R. L. Ramey, J. A. Rawlings, J. Mott Rawlings, Samuel Rennick, Paul Rigney, J. Rogde, E. B. Rogers, Henry Safford, Sr., and H. Earl Rogers. —Malvina Spearman.

MISCELLANY

POTENCY OF COAGULANTS

There are many commercial preparations on the market which are offered for use as hemostatic agents by virtue of their supposed ability to increase the coagulability of blood. Some are derived from brains of a variety of animal species, some from tissue fibrinogens, and some from bovine blood and from horse serum. They are available for use either topically,*per oram*, or by hypodermic injection. Finally there are the several types of snake venom. The efficacy of all of these is extolled by their manufacturers, in many instances based upon experiments conducted on laboratory animals. But since these coagulants are to be used in humans it is of little practical value whether or not a particular product will materially shorten the coagulation time of rabbit blood. It would seem that the only valid test of potency would be the estimation of its activity on human blood.

Aggeler and Lucia[1], using human plasma, assayed biologically the coagulative potency of seventeen of these products, and their findings reveal a great discrepancy with claims made by the manufacturers of these agents. The only substances studied that were significantly active were the crude tissue emulsions of thromboplastin intended for local use and the two snake venoms (Fer-de-lance and Russell viper). The fibrinogen products proved relatively impotent as coagulants and the thromboplastin intended for hypodermic use was found to be inactive. Horse serums were inactive in human hemophylic plasma except in high concentrations, and then only to a slight degree. The commercial product made from bovine blood yielded no coagulative activity in any concentration.

No one more than the physician realizes the need for potent hemostatics. The continued manufacture and sale of impotent agents shows a disregard by the makers for the results of scientific study. Two of the products, bovine blood derivative and hypodermic horse serum, were shown twenty years ago to possess no coagulative action[1] and yet they are still being manufactured and used. The work of Aggeler and Lucia should make commercial houses take stock and discontinue the sale of biologicals which medicine has shown to be ineffectual.

1 Aggeler, P. M., and Lucia, S. P.: Am. J. M. Sc. 199: 181 (Feb.) 1940.

—*N. Y. St. J. Med.*

ALLERGY—A BRIEF OUTLINE

Orville Harry Brown
Phoenix, Arizona

Allergy: A Metabolic-Immunologic Disturbance.

Primary Cause: Not known. May be deficiency factor. One patient attributes cure (several years' relief) of her asthma to drinking fresh ox-blood.

Contributing Causes and Treatment—

I. Heredity: Prophylaxis may benefit next generation.

II. Allergens.

1. Inhalants and Contactants.
   a. Floor covering and hangings of patient's room should be practically eliminated.
   b. Dust should be wiped up daily with moist or oil mops.
   c. Pillows and mattress should have dust-impervious coverings.
   d. Bed covers and clothing should be selected after suitability has been determined by skin tests.
   e. Animal pets must be prohibited—as a rule.
   f. Clothing and powders worn by attendants and visitors may be a danger.
   g. Exhaustive intradermal skin-tests should be made for all possible substances which may be in atmosphere or near patient.
   h. Vaccines should be prepared for all substances to which patient is found sensitive—in addition to special efforts to eliminate them. Such vaccines should be used for a long time, even though good results are or are not apparent.
   i. Pollens should be considered possible causes of any sort of allergy even though no hay-faver exists. Intradermal tests with dilutions of 1/5000 pollen vaccines are advisable.
2. Foods.
   a. Intradermal skin tests are necessary in severe cases—and advisable in all, and should be for all foods.
   b. The diet should be built of those foods which give definitely negative reactions and should be as varied as possible.

c. False negative tests are of far more concern than are false positives.
d. Stale. over-ripe, even slightly decomposed foods may be highly allergenic and skin tests for them may be negative.
e. Selection of prime foods, therefore, is most important.
f. Prolonged cooking of foods may make foods safe.
g. The "Food-Addition" method of diet (See SW. Med. Aug. 1922) should be used if doubt exists about reliability of skin tests.
h. Patient should never be allowed to overfill his stomach. May be best to feed often.
i. Food should be well chewed and not taken when patient is tired, hurried or fatigued.
j. Patient must be taught to try to correlate his symptoms with taking of foods.
k. Abstaining from harmful foods for considerable periods may render one again able to eat them.
l. Foods should always be regarded as of extreme importance even though other factors—for the time being—definitely supercede them in importance; this is because when one gets sensitive to many foods the problem is extraordinarily difficult.

3. Bacteria.
a. Infection should be regarded as the start and perhaps even the primary cause of allergy is a complication of infection.
b. Foci of infection should usually be conservatively treated. Radical treatment may be needed to effect a cure and should usually be done in all cases—after allergy is sufficiently improved—to prevent relapses.
c. Nasal catarrh—nearly universal in all allergics—especially should have careful treatment. The Hazeltine-Dowling packs may be used by all physicians even though not expert in this field. Nasal catarrh is doubly important because bacteria from the nose and throat reach the stomach and harm digestion.
d. Sensitivity to bacterial proteins should be tested. I have found stock vaccines (SW. Med. Sept. 1939) in 1-10 dilutions, each type of bacteria from two or more laboratories, to be most satisfactory materials. Autogenous vaccines may be needed to supplement the stock vaccines.
e. Vaccines are prepared from the stock—autogenous vaccines tho which a patient is found sensitive by intradermal skin-tests.
f. Administration of the "special" vaccines should be continued indefinitely even though relief is obtained early. Tolerance to the vaccine often comes slowly.

4. Protozoa. Such ingestation should always be sought and if found properly treated.
5. Molds. These should be routinely tested for; they are important in many cases—probably more than ordinarily suspected. Vaccines should be used if indicated.

III. Vitamin deficiencies may underlie allergy, or may develop because of inadequate diet during treatment. It is well to give vitamins, ad libitum for a time at least, if patient is not allergic to them. Various sources should be drawn upon, for the vitamins.

IV. Mineral deficiencies: Calcium benefits some allergics; potassium chloride may be useful occasionally in hay-fever.

V. The Endocrines.
1. Allergics commonly have hypothyroidism which should be treated. A metabolism test should be routine.
2. Many have other hormone deficiencies or dysfunctions which should be routinely treated even though results are not always definite.

VI. Gastro-Intestinal factors.
1. Inadequate acid often exists and should be supplied.
2. Pepsin may be given to advantage.
3. Pancreatic ferments may be helpful.

ENLIST

enlist
in the Women's Field Army of the American Society for the Control of Cancer, and help in the intensive war against this disease.

educate
yourself and others to recognize early symptoms that may indicate cancer.

save
some of the 150,000 who may die this year unless promptly treated. Early cancer can be cured.

join your local unit now!

or send your enlistment fee of $1.00 to

AMERICAN SOCIETY for the CONTROL of CANCER
350 Madison Ave., N. Y.

"The best method of preventing the spread of syphilitic infection is the prompt and adequate treatment of early syphilis."

"Treat by schedule and not by serologic test is the slogan of the best modern practice."

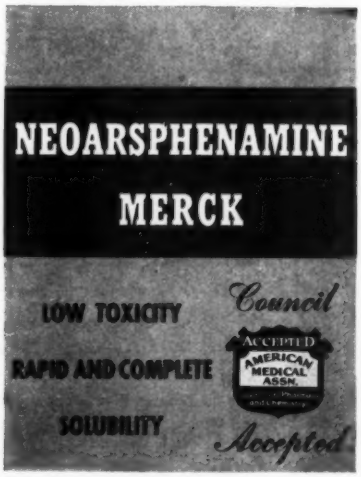
Supplement No. 6 to Venereal Disease Information, p. 14 and 49, United States Public Health Service.

A HIGH QUALITY ARSENICAL COUNTS

Since its introduction, decided advances have been made in improving the synthesis of

NEOARSPHENAMINE MERCK

Minimal toxicity, rapid and complete solubility, and meticulous ampuling are among the features that have made Neoarsphenamine Merck an excellent and widely specified arsenical.



MERCK & CO. INC. *Manufacturing Chemists* RAHWAY, N. J.

4. Gastro-intestinal toxines; enemas, mild laxatives, Kaolin, bulk producing materials may be helpful in removing them and should be tried when results from other treatments are not satisfactory.

VII. Nervousness: This should be controlled. It probably produces its most serious effect through the digestive system, and demands treatment directed at the digestive tract, as well as at the nervousness.

"CANCER QUACKS"

Neither do I believe it helps in the fight against the cancer quack when a prominent surgeon goes about, telling that he has never cured a certain type of cancer and that anyone who claims a cure must have made a wrong diagnosis. There are several explanations for discrepancies of this kind between the opinions of physicians. Perhaps, the most plausible one is that the physician has operated only patients in the very latest stages. The effect of such a pessimistic statement on the part of the physicians who see only a few cancer cases a year and on the public cannot be underestimated. Many physicians and all lay people regard cancer as a single disease, a view which is, of course, entirely wrong.

Under the general term "cancer" have been grouped a great variety of clinical diseases which differ widely in clinical course, prognosis, and radiosensitivity. Even in the same organ, as in the breast, "cancer" may be of the inflammatory variety which spreads, regardless of treatment, and kills in a few months, and on the other hand, may be of the "colloid type" which may go on for years and never cause metastases. As long as the laity does not know there are many clinical entities in the field of "cancer", I believe it is unwise to use the term "cancer" before a patient.

A well known surgeon said once that the medical profession will never succeed in stopping cancer quackery until laboratory research has given the physician therapeutic and preventive weapons as effective against cancer as those we have today against diphtheria. It is true that there are no quacks for treating diphtheria.

However, I believe our attitude should be less pessimistic, even under present conditions. If all available methods of detection, diagnosis, surgery, and radiation were to be brought to universal use, half of the present annual toll of 150,000 cancer deaths in the United States could be avoided, according to the foremost cancer students in this country.

Likewise, to aid in this achievement, all possible effort must be given to the extinguishment of the cancer quack.—*J. Kans. Med. Soc.*

SILVER PICRATE

Wyeth

Has shown a CONVINCING RECORD* OF EFFECTIVENESS in ACUTE ANTERIOR URETHRITIS

due to Neisseria gonorrheae • Trichomonas vaginalis Monilia albicans

Silver Picrate is a crystalline compound of silver in definite chemical combination with picric acid. Dosage form for use in anterior urethritis: Wyeth's Silver Picrate Crystals in an aqueous solution of 0.5 percent.

Supplied at all pharmacies in vials of 2 grams

Complete literature on Silver Picrate as used in genitourinary and gynecological practice will be mailed on request.

*"Treatment of Acute Anterior Urethritis with Silver Picrate," Knight and Shelanski, AMERICAN JOURNAL OF SYPHILIS, GONORRHEA AND VENEREAL DISEASES, Vol. 23, No. 2, pages 201-206, March, 1939.

JOHN WYETH & BROTHER, INCORPORATED, PHILADELPHIA, PA.

Please mention SOUTHWESTERN MEDICINE when answering advertisements.

Karo for Under-nutrition

Formulas . .	KARO added to milk mixtures provides (volume for volume) twice as many calories as powdered maltose-dextrins-dextrose. Hence its convenience as an addition to concentrated feedings.
Foods	KARO added to foods is a valuable aid in high caloric feeding—for KARO is relished with milk, fruit and fruit juices, vegetables and vegetable waters, cereals, breads and desserts.
	Inquiries from Physicians are invited *... for further information write* **CORN PRODUCTS REFINING COMPANY** **17 BATTERY PLACE • NEW YORK CITY**

SUPPORT YOUR ADVERTISERS

BANTI'S DISEASE

Guido Banti (1852-1927), professor of pathological anatomy of the medical faculty of the University of Florence, Italy, published his first account of the disease which bears his name in *La samaine medicale* (14:318, 1894). It is entitled "La splenomegalie avec cirrhose du foie." The original Italian draft of this article appeared a month later in *Lo sperimentale, sezione biologica* (48:447-452, 1894), with due credit to the French journal. An English translation appeared in the English edition of *La semaine medicale* (2:364, 1894). The following quotation is from the English version:

In 1882, my attention was directed to the existence of a symptomatic and anatomo-pathological complexus which, so far as I am aware, has never been described, and which may well be considered as a special kind of disease, namely, *splenomegaly with cirrhosis of the liver*. . . .

The symptoms of the disease may be divided into three groups, corresponding to as many periods, viz., the *prae-ascitic* stage, the ascitic stage, and an *intermediate stage*.

The symptoms of *prae-ascitic* stage are, tumefaction of the spleen and anaemia. . . .

In the cases with which I have had to deal, the praeascitic stage varied in duration from one year to four years and a half.

The *intermediate* stage is characterized by the appearance of dyspnoea, intestinal disorders, and sometimes haemorrhoids. . . . This stage lasts a few months.

In the *ascitic* stage a liquid effusion takes place into the peritoneum. . . . The anaemic symptoms become more and more marked; but the examination of the blood continues to give evidence of a normal number of leucocytes. This stage lasts from seven to eight months and ends in death.

—*N. E. J. of Med.*

BOOK NOTES

HANDBOOK OF ORTHOPAEDIC SURGERY. Alfred Rives Shands, Jr., B. A., M. D. Pp. 567. Illustrations 154. 2nd edition. Cloth. St Louis, The C. V. Mosby Co. 1940.

This reviewer is of the opinion that every general practitioner and peditrician should read this book. It is divided into twenty-four chapters, each one of which can be read in about thirty minutes. There are two chapters on congenital deformities followed by one each on affections of growing and adult bone. Sixty-three pages are devoted to nontuberculous infections of the bones and joints, and there are forty-two pages on tuberculous infections of the bones and joints. Beginning with infantile paralysis, there is an excellent discusson of the neuromuscular disabilities. There are chapters on tumors, disabilities associated with fractures, and body mechanics, and physical therapy. The remainder of the book is devoted to a discussion of the more common affectations of the spine

TURNER'S CLINICAL AND X-RAY LABORATORIES

FIRST NATIONAL BANK BUILDING

EL PASO, TEXAS

CLINICAL PATHOLOGY

X-RAY DIAGNOSIS

X-RAY THERAPY

RADIUM THERAPY

GEORGE TURNER. M. D. DELPHIN von BRIESEN, M. D.

New Oil-Immersed Shockproof Bedside Unit

—This latest achievement by Keleket ideally fulfills the **modern** requirements for bedside work, as a full range auxiliary unit in the main laboratory, or as a mobile X-Ray apparatus in the Emergency Receiving Room.

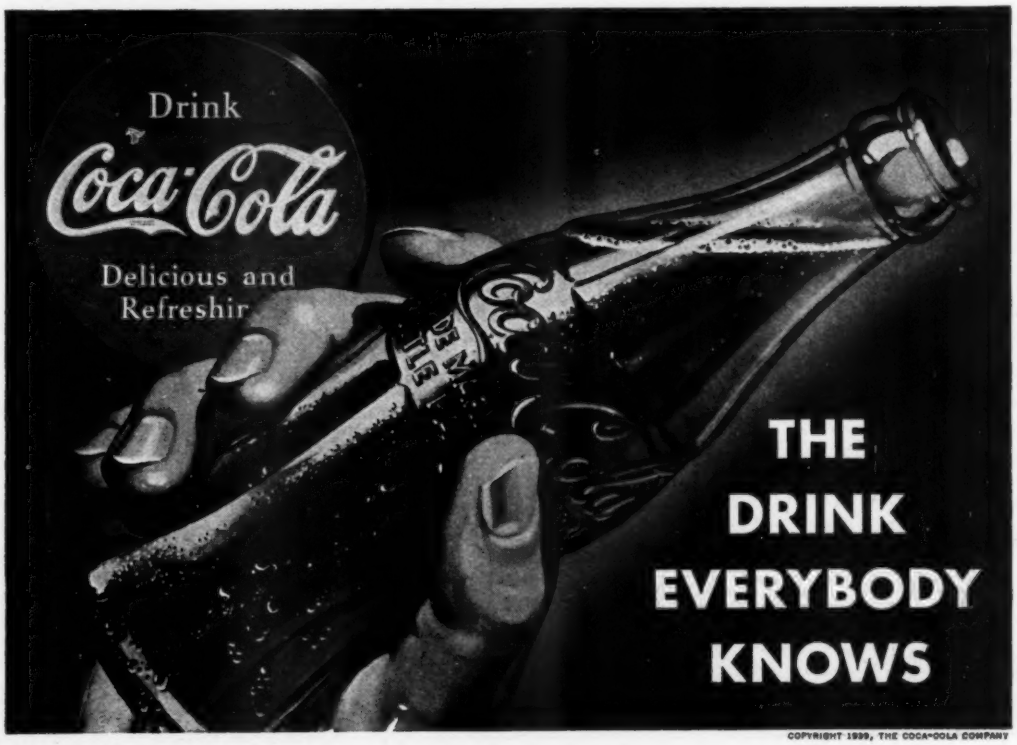
Its shockproof head may be positioned in actual contact with patient if necessary, permitting radiography at the most difficult angles.

Its extreme lightness in weight, due to ingenious elimination of heavy counterweights assures greater ease in handling. Your inspection of this modern, dependable and high capacity unit is invited—

Call or write your Authorized Keleket Agents.

Southwestern Surgical Supply Co.

EL PASO, TEXAS PHOENIX, ARIZONA



COPYRIGHT 1939, THE COCA-COLA COMPANY

and thorax and the upper and lower extremities. A complete bibliography for each chapter is near the back of the book. The author is certainly to be commended for having substituted 154 excellent sketches instead of the customary poorly reproduced roentgenograms.—E. W. S.

INJECTION TREATMENT of Hernia, Hydrocele, Ganglion, Hemorrhoids, Prostate Gland, Angioma, Varicocele, Varicose Veins, Bursae, and Joints. Penn Riddle, B.S., M.D., F.A.C.S., Assistant Professor of Clinical and Operative Surgery, Baylor University, College of Medicine. Director of Varicose Vein Clinic, Parkland Hospital, Dallas, Texas. W. B. Saunders Company, Philadelphia and London. 1940. 290 pps. 153 illustrations. Price $5.50.

This very readable volume covers the injection treatment of Hernia, Hydrocele, Ganglion, Hemorrhoids, Prostate Gland, Angioma, Varicocele, Varicose Veins, Bursae, and Joints.

The author presents in each of these conditions the etiology, the anatomy, the diagnosis of the condition, together with the indications, contraindications, complications, and the results of sclerosing treatment. The book is designed for the general practitioner and is especially written to provide guidance in these procedures which can be carried out in the doctor's office. Dr. Riddle has succeeded in presenting his subject interestingly and concisely.

"I get around at at little expense"

IT PAYS TO TELEPHONE. You get an immediate, spoken answer to your questions—no waiting for a reply.

In a three minute conversation, two people can exchange nearly 400 words. You can get all the facts, discuss them and make a decision. A telephone call to another town is really a two-way trip at one fare. For rates, just ask the operator.

Behind

MERCUROCHROME

(dibrom-oxymercuri-fluorescein-sodium)

is a background of

Precise manufacturing methods insuring uniformity

Controlled laboratory investigation

Chemical and biological control of each lot produced

Extensive clinical application

Thirteen years' acceptance by the Council of Pharmacy and Chemistry of the American Medical Association

A booklet summarizing the important reports on Mercurochrome and describing its various uses will be sent to physicians on request.

Hynson, Westcott & Dunning, Inc.

BALTIMORE, MARYLAND

Founded 1896 by Dr. Hubert Work

WOODCROFT HOSPITAL, PUEBLO, COLORADO

A modern, newly constructed Sanitarium for the scientific care and treatment of those nervously and mentally ill, the senile and drug addicts.

CRUM EPLER, M. D.

Superintendent

The rather recent revival of the injection treatment of hernia makes this text an opportune one. This technic is well described and graphically illustrated in excellent anatomical drawings and pictures. There is a chapter on the types and uses of trusses and truss pads with worthwhile discussion. The various types of sclerosing solutions are described and discussed. The author is no fanatic on the sclerosing treatment of hernia but believes that there are definite limitations to its usefulness as well as good results in properly selected cases.

Dr. Riddle has the faculty of simplifying the consideration of the injection treatment of varicose veins. This generally accepted method of treatment is described in detail and beautifully illustrated. The various tests of the venous circulation of the lower extremity are described and illustrated. The treatment of varicose ulcer is also given. The combination of venous ligation and sclerosing treatment is discussed.

In similar manner the technic of injection treatment of hemorrhoids, hydrocele, varicocele, etc., is well described.

Too much cannot be said about the 153 illustrations found in this book. It is a worthwhile and timely volume which should receive an enthusiastic reception from the profession.—R. B. H., Jr.

85c out of each $1.00 gross income used for members benefit

PHYSICIANS CASUALTY ASSOCIATION
PHYSICIANS HEALTH ASSOCIATION

HOSPITAL ACCIDENT SICKNESS } INSURANCE

For ethical practitioners exclusively
(50,000 POLICIES IN FORCE)

LIBERAL HOSPITAL EXPENSE COVERAGE	For **$10.00** per year
$5,000.00 ACCIDENTAL DEATH **$25.00 weekly indemnity, accident and sickness**	For **$33.00** per year
$10,000.00 ACCIDENTAL DEATH **$50.00 weekly indemnity, accident and sickness**	For **$66.00** per year
$15,000.00 ACCIDENTAL DEATH **$75.00 weekly indemnity, accident and sickness**	For **$99.00** per year

38 years under the same management

$1,850,000 INVESTED ASSETS
$9,000,000 PAID FOR CLAIMS

$200,000 deposited with State of Nebraska for protection of our members.

Disability need not be incurred in line of duty—benefits from the beginning day of disability.

Send for applications, Doctor, to

400 First National Bank Building - Omaha, Nebraska

Directory

SOUTHWESTERN MEDICAL ASSOCIATION

Orville Erbert, M. D. — El Paso, Texas
President
C. A. Thomas, M. D. — Tucson, Arizona
1st Vice-President
K. D. Lynch, M. D. — El Paso, Texas
2nd Vice-President
M. P. Spearman, M. D. — El Paso, Texas
Secretary-Treasurer
Wm. H. Woolston, M. D. — Albuquerque, New Mexico
President-elect
1940 Session—Tucson

ARIZONA STATE MEDICAL ASSOCIATION

Chas. S. Smith, M. D. — Nogales, Arizona
President
Daniel L. Mahoney, M. D. — Tucson, Arizona
Vice-president
Leslie R. Kober, M. D. — Phoenix, Arizona
Secretary
C. E. Yount, M. D. — Prescott, Arizona
Treasurer
D. F. Harbridge, M. D. — Phoenix, Arizona
President-elect
John Bacon, M. D. — Miami, Arizona
Chairman Medical Defense Committee
C. R. Swackhamer, M. D. — Superior, Arizona
Councilor-at-Large
Hal W. Rice, M. D. — Bisbee, Arizona
Councilor-at-Large
George O. Bassett, M. D. — Prescott, Arizona
Councilor Northern District
George C. Truman, M. D. — Mesa, Arizona
Councilor Central District
W. Paul Holbrook, M. D. — Tucson, Arizona
Councilor Southern District
J. D. Hamer, M. D. — Phoenix, Arizona
Speaker House of Delegates—Delegate Am. Med. Assn.
1940 Session—Tucson, April 18-19-20, 1940

NEW MEXICO MEDICAL SOCIETY

Geo. T. Colvard, M. D. — Deming, New Mexico
President
W. B. Cantrell, M. D. — Gallup, New Mexico
President-elect
Wallace Martin, M. D. — Clovis, New Mexico
Vice-President
L. B. Cohenour, M. D. — Albuquerque, New Mexico
Secretary-Treasurer

COUNCILLORS

C. B. Elliott, M. D. — Raton, New Mexico
R. O. Brown, M. D. — Santa Fe, New Mexico
H. A. Miller, M. D. — Clovis, New Mexico
R. L. Bradley, M. D. — Roswell, New Mexico
Carl Mulky, M. D. — Albuquerque, New Mexico
C. A. Miller, M. D. — Las Cruces, New Mexico
1940 Session—Albuquerque, May 27-28-29, 1940

EL PASO COUNTY (TEXAS) SOCIETY

Leslie M. Smith, M. D.
President
Harry Leigh, M. D.
Vice-President
Jesson Stowe, M. D.
Secretary-Treasurer
H. H. Varner, M. D.
President-Elect

BOARD OF MANAGERS SOUTHWESTERN MEDICINE

Arizona State Medical Association:
J. D. Hamer, M. D. — Phoenix, Arizona
D. F. Harbridge, M. D. — Phoenix, Arizona
(Secretary-Treasurer)
New Mexico Medical Society:
W. B. Cantrell, M. D. — Gallup, New Mexico
Geo. T. Colvard, M. D. — Deming, New Mexico
Southwestern Medical Association:
Wm. Henry Woolston, M. D. — Albuquerque, New Mexico
J. W. Cathcart, M. D. — El Paso, Texas
El Paso (Texas) Medical Society:
Paul Gallagher, M. D. — El Paso, Texas
(Chairman)
L. O. Dutton, M. D. — El Paso, Texas

ETHICAL ADVERTISING

READERS of SOUTHWESTERN MEDICINE may trust our advertisers. Our Publication Committee investigates and edits every advertisement before it is accepted. It must represent an ethical and reliable institution and be truthful or it is rejected. These advertising pages contain a wealth of useful information, a world of opportunities. Read them all.

Index To Advertisers

Bank, Joseph II
Borah, Chas. E. II
Breck, L. W. and Secord, E. W. III

Clohessy, T. T. II
Coca-Cola III
Corn Products Co. 109
Cutter Laboratories ..... Cover 4

Dorsey-Burke Drug Store IV

Gatterdam, E. A. II
Giere, C. Norman III

Holland-Rantos Co., Inc. VII
Holmes, Fred G., Randolph, Victor, and Randolph, Howell II
Homan, Ralph H. III
Hynson, Wescott & Dunning 112

Jordan, Gerald H. III

Las Encinas Sanatarium V
Lilly & Company, Eli X
Los Angeles Tumor Institute IV
Lovelace Clinic II
Lynch, K. D. III

Mason-Miller Drug Co. IV
Mead Johnson Company IX
Medigovich, D. V. II
Medical & Dental Finance Bureau II
Merck & Co., Inc. 107
Mountain States Tel. & Tel. Co. 112
Multhauf, A. William III
Myers, John W. II

Owens, Hala, Sanitarium II

Pathological Laboratory ..... Cover 1
Pathological Laboratory II
Parke, Davis & Company VIII
Petrolagar ..... Cover 2
Physicians' Casualty Association 113
Purcell, H. M. II

Rosenbaum, M. G. II

Safford, Henry T. III
S. M. A. Corp. ..... Cover 3
Smith, Leslie M., Hughes, Raymond P. III
Snidow, Francis A. III
Southwestern Surgical Supply Co. III
Specialists in the Southwest ..... II, III
Squibb, E. R. & Son VI

Turner's Clinical & X-ray Laboratories 110

Upjohn Co., The I

Vance, James III
Vandevere, W. E., Spearman, M. P. III

Wayland Prescription Pharmacy IV
Werley, G. III
Womack Clinic III
Woodcroft Hospital 112
Wyeth & Bro., John 108